2030
REVENUE CONSTRAINED REGIONAL TRANSPORTATION PLAN: 2006 UPDATE

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FINAL
February 2006

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As of January 26, 2006

ACKNOWLEDGEMENTS

Many individuals aided in the preparation of material contained in this long-range Regional Transportation Plan (RTP). In particular, the cooperation and involvement of members of various SANDAG committees and working groups are acknowledged.

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EXECUTIVE SUMMARY

INTRODUCTION

The 2030 Revenue Constrained Regional Transportation Plan: 2006 Update is a technical update to the MOBILITY 2030 Regional Transportation Plan (RTP). MOBILITY 2030 was adopted in March 2003, and contained three 2030 funding scenarios: a conservative Revenue Constrained Plan at $30 billion, a mid-range Reasonably Expected Revenue Plan at $42 billion, and an Unconstrained Plan at $67 billion. This 2006 Update only changes the forecasted revenues and projects included in the Revenue Constrained Scenario. The more robust Reasonably Expected Plan remains the vision of the region and MOBILITY 2030.

The Revenue Constrained Plan is an alternative required by federal law as the basis for analyzing the air quality impacts of the long-range transportation plan. The air quality conformity analysis must be performed every three years, and the Revenue Constrained Plan only can assume current sources and trends of federal, state, and local transportation revenues projected out to 2030. By updating the Revenue Constrained Plan in 2006, the region would satisfy existing federal law. The new federal transportation bill, SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users), does not change the cycle to four years until July 2007.

Two key items shape the changes between the Revenue Constrained Plan in 2003 and 2006. First, the forecast of funding sources through the year 2030 has been updated to include the extension of *TransNet* beyond 2008. Second, the project list was revised, limited by the available funding. The project list includes the *TransNet* Early Action Program, along with revised project cost estimates that reflect the dynamic changes in our economy since 2003. One minor change also included in the 2030 Revenue Constrained Regional Transportation Plan: 2006 Update is the final 2030 Regional Growth Forecast, which was adopted for planning purposes after MOBILITY 2030.

MOBILITY 2030 was based on the Reasonably Expected Revenue Scenario that assumed additional funding such as the then proposed extension of the *TransNet* one-half cent sales tax. Following the 2006 technical update will be a new Comprehensive RTP in 2007 that also will explore additional funding beyond Revenue Constrained. The 2007 RTP will develop a stronger connection between smart growth land use and transportation planning, bringing together the results of the Independent Transit Planning Review and Smart Growth Concept Map. Additionally, issue papers will be developed to address RTP-related strategic initiatives from the Regional Comprehensive Plan and new areas related to transportation such as energy demand, toll facilities, as well as public safety and homeland security.

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A SMARTER PLAN

The foundation of the 2006 Revenue Constrained Plan lies in better connecting our freeway, transit, and road networks to our homes, schools, work, shopping, and other activities. In this era of budget and infrastructure deficits, the ultimate success of this Plan will be measured by how well our cities and the County implement smart growth as our communities are developed and redeveloped over time. To this end, the 2006 Revenue Constrained Plan helps strengthen the land use – transportation connection and offers regional transportation funding incentives to jurisdictions that support smarter, more sustainable land use.

Improving transportation is one component of a much larger vision to sustain and improve our region's quality of life. SANDAG adopted a Regional Comprehensive Plan (RCP) in 2004 that serves as the foundation for integrating land uses, transportation systems, infrastructure needs, and public investment strategies within a regional smart growth framework. The RCP is the regional vision to prepare for change and meet our future needs.

What's the Vision for Transportation?

The vision in the MOBILITY 2030 Regional Transportation Plan is to develop a flexible transportation system that focuses on moving people and goods – not just vehicles. The vision is to provide more convenient, fast, and safe travel choices for public transit, ridesharing, walking, biking, private vehicles, and freight. It commits the region to preserve its existing transportation resources and manage the regional transportation system efficiently.

At the core of MOBILITY 2030 are seven policy goals:

- **Mobility** – Improve the mobility of people and freight
- **Accessibility** – Improve accessibility to major employment and other regional activity centers
- **Reliability** – Improve the reliability and safety of the transportation system
- **Efficiency** – Maximize the efficiency of the existing and future transportation system
- **Livability** – Promote livable communities
- **Sustainability** – Minimize effects on the environment
- **Equity** – Ensure an equitable distribution of the benefits among various demographic and user groups

While all goals are considered interrelated and important, Mobility is considered the Plan's highest goal.

Building on Our Progress

The 2006 Revenue Constrained Plan builds upon the existing transportation system in place today and the major projects in progress since 2003. Several highway improvements are currently under construction, including the I-5/I-805 merge widening, the I-15 Managed Lanes (new carpool lanes and Bus Rapid Transit stations), various widening projects on Interstates 5, 15, and State Route (SR) 78.

Transit projects in the construction phase are the SPRINTER in North County and modifications to several Trolley and COASTER stations, such as San Ysidro and Oceanside Transit Center. Construction is underway on the Oceanside-Escondido bikeway and Coastal Rail Trail, widening regional arterials such as Rancho Santa Fe Road in Carlsbad and San Marcos, and incident detection systems (installation of closed-circuit television) along stretches of Interstates 15 and 805, and SR 163.

Roadway projects in the design or environmental phases include: Interstates 5, 15, 805, and State Routes 52, 76, 94, and 905. Transit projects in the design or environmental phases include the Mid-Coast Light Rail Transit (LRT).

A PLAN FOR BETTER MOBILITY

There are four major components of Mobility: Land Use, Systems Development, Systems Management, and Demand Management (Figure 1.1). Each component has a unique, yet interdependent, role in improving mobility and travel in the San Diego region through the year 2030. The 2006 Revenue Constrained Plan focuses on updates to the Systems Development component. Systems Development provides needed regional transportation improvements, viable travel choices, and connections to our daily activities.

FIGURE 1.1—FOUR COMPONENTS OF MOBILITY

Systems Development: More Travel Choices

New and better connections are planned to more efficiently move people on buses, trolleys, trains, and cars throughout the region. When implemented, the projects in the 2006 Revenue Constrained Plan will improve the region's highway and roads network, and transform it into a robust system with more lanes dedicated to carpools and buses integrated with new, high-quality regional transit services. The 2006 Revenue Constrained Plan includes a flexible roadway system, which can be used by transit and high-occupancy vehicles (HOVs), and improves goods movement through the region.

Regional Transit Vision

The 2006 Revenue Constrained Plan calls for a network of fast, flexible, reliable, safe, and convenient transit services that connect us to the region's major employment and activity centers. Other proposed services showcase the integration of public transportation and local land uses, a central theme of the 2006 Revenue Constrained Plan. The new routes operate at higher speeds, averaging 40 miles per hour for regional services and 25 miles per hour for corridor services.

In our local communities, transit stations must be integrated into the activity centers. These areas will be pedestrian- and bicycle-friendly, and serve as pleasant walk and wait environments for customers. There is particular attention to the transit customer in the 2006 Revenue Constrained Plan. The proposed transit services take advantage of a new generation of advance-design vehicles, which have the flexibility of buses and the look and feel of rail. These low-floor vehicles along with smart fare cards allow for easier and speedier boarding. Upgraded stations and real-time information will let patrons know when the next vehicle will be arriving.

Integrating Transit and Roadways

Competitive transit service must be able to operate in congestion-free lanes. The 2006 Revenue Constrained Plan includes an extensive network of Managed/HOV lanes on the highway system designed to accommodate transit services as well as carpools, vanpools, and fee-paying patrons (similar to I-15 FasTrak™, where fees fund transit services in the I-15 corridor). On arterials, the 2006 Revenue Constrained Plan includes funding for transit priority treatments. The 2006 Revenue Constrained Plan also includes major transit capital projects, such as transitways, double tracking, direct access ramps, and grade separations, and provides operational funding for the expanded regional transit system. The 2006 Revenue Constrained Plan is shown on Figure 1.2.

IMPLEMENTING THE 2006 REVENUE CONSTRAINED PLAN

Implementing the 2006 Revenue Constrained Plan requires close cooperation and coordination among all transportation agencies, local jurisdictions, and the traveling public. The 2006 Revenue Constrained Plan relies on efficient and more cost-effective use of our existing and projected transportation funds to provide the proposed improvements. The Revenue Constrained Scenario provides a conservative budget for future transportation improvements, but is only the initial phase of achieving the larger vision of MOBILITY 2030.

Figure 1.2
2030 REVENUE CONSTRAINED NETWORK (2006 UPDATE)
February 2006

- Highways - HOV/Managed Lanes
- Transit
- Highways - General Purpose Lanes
- Highways - Access Improvements
- HOV Connectors
- Freeway Connectors

MILES
0 3 6
0 4.83 9.6
KILOMETERS
N

SANDAG

CHAPTER 2
REGIONAL TRENDS THROUGH 2030: HOW ARE WE GROWING AND CHANGING?

DEMOGRAPHICS

The San Diego region has resumed its familiar pattern of growth. Since the recession ended in the mid-1990s, population growth in the region has averaged about 40,000 persons per year. Currently, the region's rate of population change is higher than the nation. This has been the case since the region's economy emerged from the recession of the early 1990s. SANDAG's 2030 Regional Growth Forecast projects that between 2000 and 2030 the region will add over one million more people, 314,000 new homes, and 440,000 new jobs. Figure 2.1 compares the region's historic and future growth rates to those of the nation.

In spite of those figures our growth rate is actually slowing and that trend will continue. During the late 1980s the region was adding as many as 90,000 persons per year, an annual growth rate of three percent. By the mid-2010s, the region's growth rate will be approximately one percent per year, a rate similar to that of the nation. Currently, Riverside County, Imperial County, and Tijuana, Mexico, are all growing at faster rates than San Diego.

All population growth comes from just two sources: natural increase (births minus deaths), and net migration (people who move here minus those who move away). Migration consists of two components: domestic migration and foreign immigration. The amount of legal foreign immigration is controlled by the federal government, and has remained fairly constant over the past decade. No major change in immigration levels is expected in the foreseeable future. Domestic migration—people moving to and from other parts of the state or the nation—fluctuates each year, usually based on the condition of the local economy. During the recession years in the early 1990s, for example, more people left the region to search for economic opportunities elsewhere.

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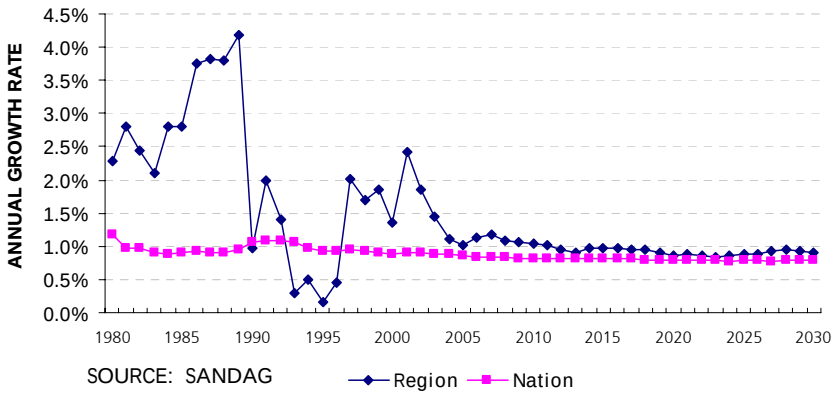
SANDAG projects that between 2000 and 2030 the region will add over one million more people, 314,000 new homes, and 440,000 new jobs.

FIGURE 2.1—POPULATION GROWTH RATE



SOURCE: SANDAG

The main reason our growth rate is slowing is a continuing decline in fertility rates (the average number of children born to each woman). Recent data show that this is occurring across most ethnic groups, and that the sharpest drop is seen among the Hispanic population.

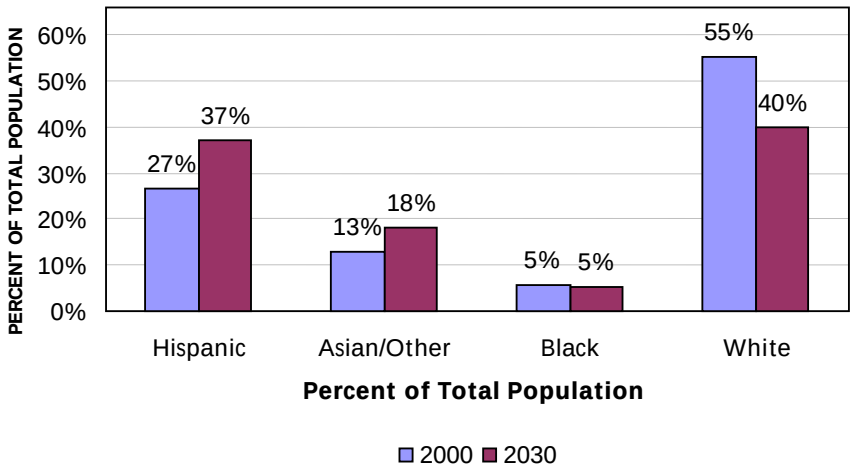
As the region grows during the next 25 years, some basic demographic characteristics of the population will change. As a group, we will become both older and more ethnically diverse.

As the region grows during the next 25 years, some basic demographic characteristics of the population will change. As a group, we will become both older and more ethnically diverse. The increase in diversity is the result of the various ethnic groups growing at different rates. While the region as a whole is expected to grow by about 37 percent by 2030, the Hispanic and the Asian/Other groups will each almost double in size during that time period. The Black population will grow by almost 28 percent, slightly below the regional rate. In contrast, the non-Hispanic White population will slightly decrease by about 1 percent. This pattern is similar to what we have been seeing for the last couple of decades.

Figure 2.2 shows that by 2030 the Hispanic proportion of the region's population will rise from today's 27 percent to 37 percent. The Asian/Other group will increase to 18 percent of the total population from its current 13 percent. The Black population will stay relatively constant at about five percent. The biggest change will be seen in the non-Hispanic White group, whose portion of the total population will drop from today's 55 percent down to 40 percent. When their share falls below 50 percent—by 2010—there will be no ethnic majority in the region. Statewide, that is true today. The 2000 Census found that just 47 percent of Californians are non-Hispanic Whites.

In addition to ethnic changes, our region also is aging. Over 30 percent of the region's population is baby boomers, the huge group of people born between 1946 and 1964. Their presence will help to raise the median age in the region from today's 33.2 years old to 39 years old in 2030—an increase of 17 percent. By 2030, the number of people age 65 and older will increase by 136 percent. Fully 19 percent of the region's population will be in that age group then, which is a higher percentage than is seen today in the state of Florida.

FIGURE 2.2—THE REGION'S CHANGING ETHNIC COMPOSITION



EMPLOYMENT & HOUSING

Job growth is directly linked to population growth. When there is an abundance of jobs in a region, domestic in-migration increases as people move to take advantage of the economic opportunities. SANDAG's 2030 Regional Growth Forecast predicts that the region will add about 440,000 new jobs by 2030. Half of those jobs will be created during the first 15 years of the forecast period, and the remaining during the second 15 years.

Jobs will be created across all industry sectors. However, the largest gains will be seen in the relatively low-paying Services sector, which is expected to grow by 50 percent. We are already beginning to see the impacts of the disparity between local wages and housing costs. More and more people are choosing to keep their jobs within the region, but move to more affordable homes in Riverside and Imperial Counties, and northern Baja California, Mexico.

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This interregional commuting will continue to increase, and is reflected in the 2030 Regional Growth Forecast. Over the 30-year period it is estimated that 93,330 more households will have residents living in Riverside County or Baja California while working within the San Diego region. Long-distance commuting, both interregional and from within the region, has a tremendous impact on our transportation facilities.

However, increases in interregional commuting will have some dampening effect on local housing demand. Providing homes for an additional one million people over the next 30 years will still require at least 314,000 new housing units within the region. We are running out of large, environmentally-acceptable land parcels that are planned for residential use.

In 2000, about 60 percent of the region's housing stock consisted of single-family units, and about 35 percent were multifamily. (The remaining five percent are mostly mobile homes.) The combination of a scarcity of vacant, developable single-family land and increasing congestion on our roads and highways will lead to a shift in housing characteristics. Of the 314,000 units the region will build over 30 years, it is expected that more than half will be some sort of multifamily configuration, including stacked flats, attached town homes, and mixed-use projects. This shift in housing type reflects the region's emphasis on smart growth, providing better housing availability, and an expected shift in housing preferences as the region's population ages. Much of this development will occur as redevelopment of older areas.

Of the 314,000 units the region will build during 25 years, it is expected that more than half will be some sort of multifamily configuration, including stacked flats, attached town homes, and mixed-use projects.

Figures 2.3 and 2.4 show four ranges each of population and employment densities, respectively, per quarter square mile in 2030.

AIR QUALITY

The federal Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set national air quality standards. The State of California has adopted even more stringent standards.

Under federal and state air quality regulations, special requirements in non-attainment areas ensure that proposed transportation activities—plans, programs, and projects—do not cause new, or contribute to existing, air quality problems. Compliance with these regulations is referred to as "transportation conformity," which requires analyses that demonstrate that forecasted emissions are within healthy air quality limits. The air quality conformity analysis for the 2006 Revenue Constrained Plan is included in Appendix B.

Cleaner Air

The San Diego region's primary air pollution problems are caused by ozone, also known as photochemical smog. Emissions from cars, power plants, chemical plants, and other sources cause smog. Pollution transported from the Los Angeles air basin also adversely affects our region's smog levels. The U.S. EPA has added a new standard that measures ozone levels over 8-hour periods. The more stringent 8-hour ozone standard will protect the public against longer exposure periods. The U.S. EPA has designated the San Diego region as non-attainment for the 8-hour ozone standard effective on June 15, 2004.

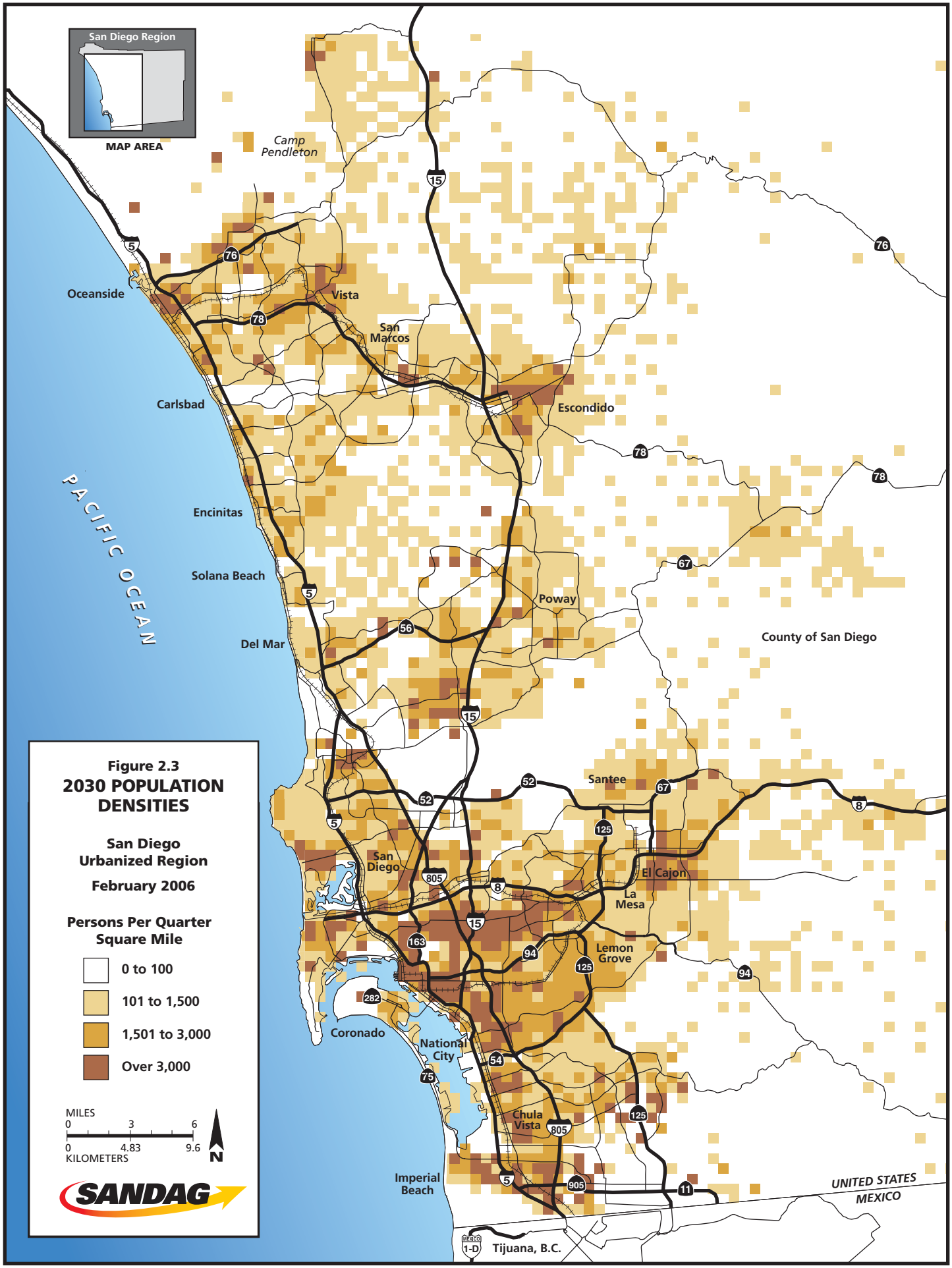
In spite of large increases in vehicle miles traveled over the past two decades, the region's air quality has actually gotten better over time.

In spite of large increases in vehicle miles traveled over the past two decades, the region's air quality has actually gotten better over time. Figure 2.5 displays the downward trends in air pollution levels in the region since 1984.

Improvements from the transportation sector are primarily the result of advances in technology. The elimination of lead in gasoline, lower fuel volatility, and the advancement of emissions control systems have significantly reduced air quality emissions, including reactive hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx).

Continued Commitment to Better Air

Air quality remains an important concern for the region. Federal and state standards are safeguards against the adverse health effects of pollution. The Revenue Constrained Plan reaffirms the region's commitment to maintain air quality standards. The integration of smart growth development combined with the investments in public transit, managed/HOV lanes, pedestrian, and bicycle facilities will help lessen dependency on motor vehicle travel, which, in turn, will benefit the region's air quality.


San Diego Region
MAP AREA
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Escondido
PACIFIC OCEAN
Encinitas
Solana Beach
Del Mar
Poway
County of San Diego
Santee
El Cajon
La Mesa
Lemon Grove
San Diego
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO
Figure 2.3
2030 POPULATION DENSITIES
San Diego Urbanized Region
February 2006
Persons Per Quarter Square Mile
0 to 100
101 to 1,500
1,501 to 3,000
Over 3,000
MILES
0 3 6
0 4.83 9.6
KILOMETERS
N
SANDAG

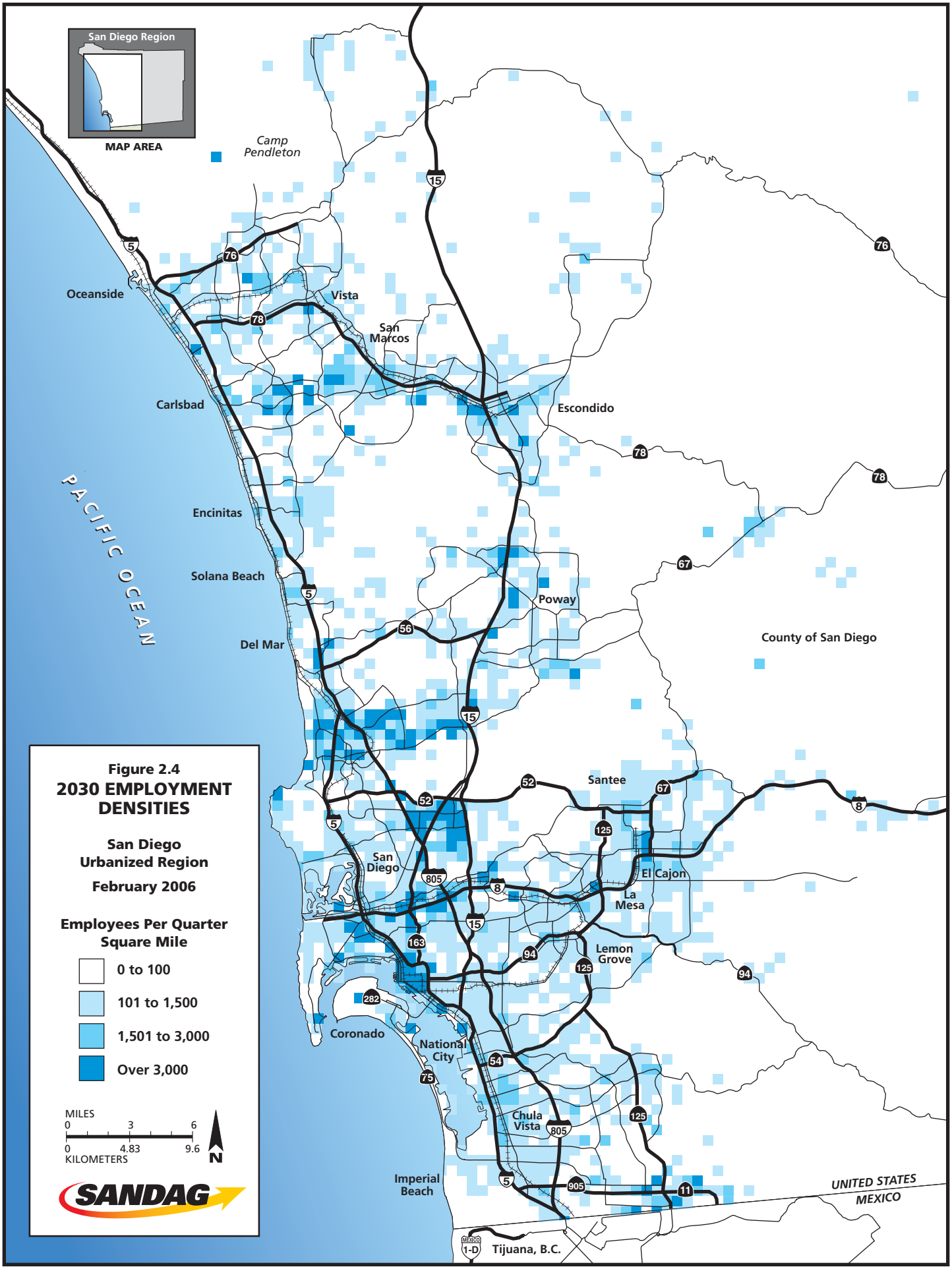
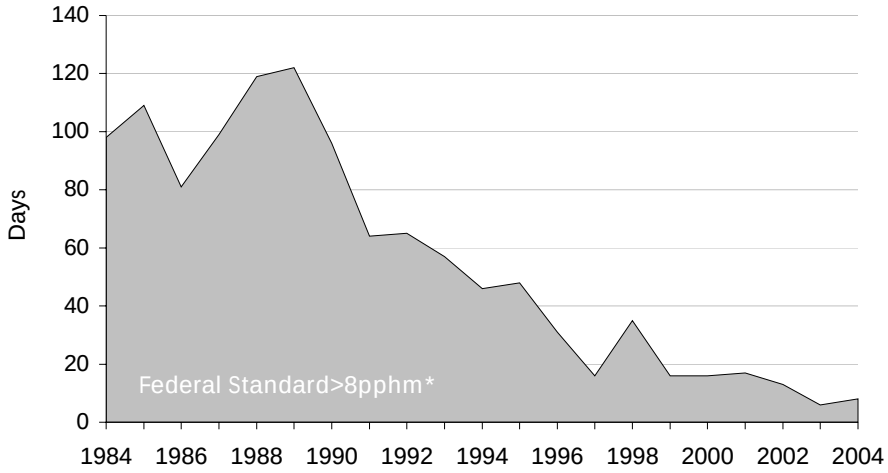

San Diego Region
MAP AREA
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Poway
County of San Diego
Santee
El Cajon
La Mesa
Lemon Grove
San Diego
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
PACIFIC OCEAN
UNITED STATES
MEXICO
Figure 2.4
2030 EMPLOYMENT DENSITIES
San Diego Urbanized Region
February 2006
Employees Per Quarter Square Mile
0 to 100
101 to 1,500
1,501 to 3,000
Over 3,000
MILES
0 3 6
0 4.83 9.6
KILOMETERS
N
SANDAG

FIGURE 2.5—DAYS EXCEEDING 8-HOUR OZONE CLEAN AIR STANDARDS – SAN DIEGO AIR BASIN



* pphm – parts per hundred million

SOURCE: San Diego Air Pollution Control District

ENVIRONMENTAL JUSTICE

Environmental Justice is defined as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws and policies. SANDAG's plans, projects, and programs comply with the principles of environmental justice and all associated federal and state requirements.

Environmental Justice encourages better land use decisions, improves access to jobs, helps promote good air quality, and strengthens neighborhoods. It also supports community involvement in regional planning and programming through improved communications and active engagement with the process.

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Promoting Public Involvement

In order to avoid any adverse impacts of the RTP on minority[1], low income, or other populations at risk of adverse impacts, SANDAG is undertaking a program to promote community involvement in the planning process. Through its expanded community outreach, SANDAG is attempting to learn of the community's needs for improved transportation and listen to proposals for accomplishing the improvements.

[1] Minority groups include African-American, Asian, American Indian or Alaskan Native, and Native Hawaiian or Other Pacific Islander. In addition, persons of Hispanic ethnicity are considered a minority group.

A public outreach program began prior to the release of the draft 2006 Revenue Constrained Plan. Appendix A provides additional information about the public outreach activities. Through this program, SANDAG Directors and staff members informed stakeholders about the technical update and solicited input and comments throughout the planning process.

To remain in contact with the community and open to its comments, SANDAG has a number of committees and working groups to advise it on transportation and transit plans and programs.

SANDAG maintains an extensive Web site of information and invites public communications through e-mail, phone, and attendance at meetings.

SANDAG continues its program of promoting the use of public transit and invites the low-income community, especially those who are transit-dependent, to communicate with SANDAG on their needs to access jobs, school, and personal business locations.

There are 18 Native American reservations and 17 tribal governments in the San Diego region. In 2002 SANDAG held the first ever Tribal Governments/SANDAG Board of Directors Summit to promote cooperation between SANDAG and the Tribal Governments. Additional summits will be held to continue the dialogue between the governments. The next summit is scheduled for March 2006.

There are 18 reservations and 17 tribal governments in the San Diego region.

Tribal consultation is an integral component of SANDAG's Public Involvement Policy, and government-to-government relations with area tribes is a core component of the Borders Committee mission and responsibilities. SANDAG is partnering with the Reservation Transportation Authority (RTA), a tribal-owned agency dedicated to supporting the transportation needs of native nations in Southern California, in facilitating the involvement of area tribes in the transportation planning process. A representative of the Southern California Tribal Chairmen's Association (SCTCA), an intertribal council of tribal leaders in San Diego, is now an advisory member of SANDAG's Borders Committee. Through this mechanism of communication, SANDAG is ensuring that the transportation needs of the tribal nations and their members and the residents of the reservations are considered in the development of the RTP.

Population and Ethnicity

The San Diego region is an ethnically diverse area, and it will become more so by 2030. Just ten years ago, the non-Hispanic White population of the region was 65 percent of total population. Census 2000 data show that non-Hispanic Whites now constitute 55 percent of the population, continuing to decline to 40 percent by 2030. Hispanics comprise 27 percent of the region's population today and will make up 37 percent of the population by 2030.

Between 2000 and 2030, the Asian/Other population will increase from 13 percent to 18 percent. The Native American population, which is a portion of the Asian/Other population, will remain steady at about 1 percent of the region's total population. The share of Black/African American population will remain at 5 percent to 6 percent.

Income and Other Factors

In 1999, the region's median household income as reported by the U.S. Census Bureau was $47,067, with 12 percent of the population of the region living below the federal poverty thresholds. Comparable figures for 1989 were $35,000 median household income and 11 percent of the population below the poverty thresholds. By 2030, the median household income is predicted to increase to $72,000 (in 1999 dollars).

In 2000, 33 percent of the region's population spoke a language other than English at home.

Other characteristics of the region's population of concern to Environmental Justice programs include the following:

- In 2000, 33 percent of the region's population spoke a language other than English at home.
- 21.5 percent of the population was foreign-born.
- Persons with disabilities accounted for 18 percent of the non-institutionalized population.

ACTIONS

The following actions support the Regional Trends Through 2030 Chapter recommendations.

REGIONAL TRENDS THROUGH 2030: HOW ARE WE GROWING AND CHANGING	
Proposed Actions	**Responsible Parties**
Air Quality and Conformity – The following proposed actions support the RTP goal of Sustainability.	
1. Implement the Regional Air Quality Strategy (RAQS), with the assistance of SANDAG where appropriate, and ensure that transportation plans contribute to the implementation of the RAQS and conform to the current State Implementation Plan (SIP).	APCD and SANDAG
2. Review and update the Transportation Control Measures (TCM) Plan for Air Quality for consistency with changing goals and policies. Any revisions to the TCM Plan would be submitted to the APCD for inclusion in mandated updates of the RAQS and the SIP.	SANDAG and APCD
3. Encourage local jurisdictions to implement smart growth strategies, including the APCD's Air Quality/Land Use Guidelines.	SANDAG
Environmental Justice – The following proposed actions support the RTP goals of Accessibility and Equity.	
4. Seek comments from minority and low-income communities in planning and programming efforts to ensure that plans and programs do not adversely affect the communities.	SANDAG
5. Work with the region's transit operators to ensure that transit services are available to minority, disabled, elderly, and low-income persons so that they have access to services, employment, and schools.	SANDAG

CHAPTER 3
FINANCIAL STRATEGIES: PAYING OUR WAY

The financial analysis of the recommended transportation improvements of the 2006 update of the 2030 Revenue Constrained Regional Transportation Plan focuses on transit, highway, and local street and road improvements. The revenue constrained plan provides a conservative budget for future transportation improvements based on existing and known funding sources and historical trends. Based on the forecasts of available revenues, new capital projects and the operating, maintenance, and rehabilitation costs of the region's transportation systems were phased over the next 26 years. Actions are recommended to maintain the revenues necessary to implement the improvements recommended in the 2006 update of the Revenue Constrained RTP.

CHAPTER CONTENTS

REVENUE ASSUMPTIONS

The financial plan and analysis focuses on implementing the 2006 update to the Revenue Constrained Plan, which was adopted in 2003 as part of MOBILITY 2030. The update of the revenue constrained plan also meets the federal requirements for demonstrating a financially constrained long-range transportation plan. This plan focuses on transit, highway, and local street and road improvements (Systems Development) as well as the Land Use, Systems Management, and Demand Management components.

This constrained financial plan is required by state and federal planning regulations and is limited to current sources and levels of federal, state, and local transportation revenue projected out to the year 2030. This scenario includes federal and state formula funds as well as federal and state discretionary funds for existing projects. State and federal gas taxes are assumed to stay at today's levels (18 cents and 18.4 cents per gallon, respectively). In addition, based on the November 2004 voter approval of extension of the *TransNet* transportation sales tax through 2048, this analysis includes 22 years of additional *TransNet* revenues beyond the expiration of the initial measure in 2008. Available funding that is discretionary for either capital or operations was assumed to be distributed as needed.

Figure 3.1 and Table 3.1 summarize major funding sources totaling approximately $35.7 billion. *TransNet* funds are included both as pay-as-you-go revenues and revenue bonds. Together these two *TransNet* sources comprise approximately $8.6 billion, or about 24 percent of the total. The remaining local funding totals approximately $14.9 billion, or about 42 percent of the $35.7 billion, with state and federal funds providing 22 percent and 12 percent, respectively.

A summary of the major project expenditures is provided in Figure 3.2 and Table 3.2. Transit projects account for approximately $12.3 billion, or about 35 percent of the total. Highway projects account for approximately $12.2 billion (35 percent of the total), including the Managed Lanes/HOV facilities ($4.8 billion). Local street and road projects are estimated to total nearly $10 billion, or about 27 percent, and the final category of land use, systems management, and demand management strategies totals approximately $1.1 billion, or about 3 percent of the $35.6 billion.

The specific projects and services included in the Revenue Constrained Plan are described in Chapter 4.

The following summary details the assumptions regarding each local, state, and federal funding source. All funding sources are shown in 2005 dollars.

Local Revenues

- ***TransNet* ½ Percent Local Sales Tax Revenues** – were assumed to increase each year over the $228.6 million received in FY 2005 based on the growth in taxable retail sales as projected by the SANDAG Demographic and Economic Forecasting Model (DEFM). The amounts shown for the revenue constrained scenario represent the funds estimated to be available for the entire planning period. The measure to extend *TransNet* included revised provisions for programmatic allocation of the revenues. While the initial *TransNet* measure provided for one-third distribution to each highways, local streets and roads, and transit, the new measure specifies percentages for a variety of purposes, including major corridors (which may include highways, transit, or both), local streets and roads, transit operations or capital, an environmental mitigation program, a smart growth incentive program, non-motorized transportation improvements, and a $2,000 per dwelling unit developer impact fee, among others. With bond counsel concurrence, the net revenues from the initial *TransNet* measure are assumed to be available to advance projects from the expenditure plan for the *TransNet* extension. The amounts remaining from the initial measure, including interest earnings less current debt service payments on bonds issued to date, have been assumed to provide borrowing capacity to advance projects.

  Borrowing assumptions include the issuance of short-term commercial paper to carry project needs until 2008. Once the revenue stream from the *TransNet* extension begins, short-term debt can be converted to long-term bond debt. The bonding debt coverage has been limited to 1.3 times debt service; i.e., annual revenues must be at least 1.3 times the annual debt service payment. This 1.3 coverage ratio applies to the program as a whole.

- **Transportation Development Act (TDA) ¼ Percent Sales Tax Funds** – were assumed to grow from the $113 million received in FY 2005 in the same manner as *TransNet* funds since TDA funds also are based on growth in the sales tax. The total TDA funds projected were reduced by three percent to account for administration and planning activities as provided in state law. TDA funds may be used for transit operating or capital purposes, but are not eligible for use on non-transit-related highway or local street and road improvements.

- **Local Street and Road Gas Tax Subventions** – The current level of gas tax subventions to the 18 Cities and the County of San Diego for local street and road purposes was assumed to continue to be available (actual receipts totaled $97.7 million in FY 2003). The total of these revenues for the region was increased each year based on the estimated growth rate in the number of gallons of fuel consumed in the region based on Caltrans projections reflecting future fuel efficiency, vehicle miles traveled (VMT), and vehicle fleet mix projections (i.e., gas,diesel, electric, etc.).

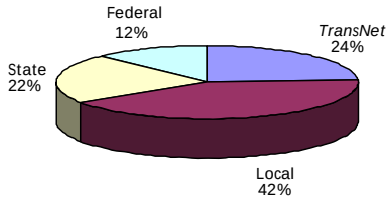
- **Local Street and Road General Fund and Other Revenues** – Based on information provided in the State Controller annual reports for local street and road expenditures and revenues, the average amount of general fund contributions and other revenues (including fines and forfeitures, interest earnings, and other miscellaneous revenue sources) used for local street and road expenditures in recent years was assumed to continue. These funds have varied greatly over the last eight years, with annual changes ranging from a negative 27.9 percent to an annual increase of 37.8 percent. Therefore, only a modest three percent annual growth rate has been assumed.

- **Toll Road Funding** – the funding derived from debt financing backed by future toll revenues has been assumed to be available in the same time periods as the construction for the major phases of the SR 125 and SR 241 toll road projects.

State Revenues

- **State Transportation Improvement Program (STIP) Funds** – have been based on the preliminary 2006 STIP Fund Estimate issued by the California Department of Finance in cooperation with the California Transportation Commission. Only those projects already programmed through 2009 are assumed. For the remaining two years of the 2006 STIP, the funds have been estimated using the region's historical share of the state total. Future years have been based on an average of these STIP estimates through 2011 and escalated continuing the trends established in the preliminary 2006 STIP Fund Estimate. Deductions were made for previous commitments, including Assembly Bill (AB) 3090 reimbursements and Grant Anticipation Revenue Vehicle (GARVEE) bond payback for the I-15 Managed Lanes.

FIGURE 3.1
MAJOR REVENUE SOURCES/
REVENUE CONSTRAINED SCENARIO
($35.7 Billion)



It should be noted that the STIP Fund Estimate increasingly relies on the availability of Proposition 42 funding and assumes that a significantly high proportion of the State Highway Account funding will be used for maintenance of the existing State Highway System.

Based on the provisions of Senate Bill (SB) 45, the San Diego region should continue to receive at least a minimum formula "County Share" of statewide levels and a comparable portion of the STIP Interregional program funds over time as well. The total STIP funds assumed include revenue from both the Regional and Interregional STIP shares. The STIP funds are flexible and are available for capacity-enhancing highway, transit, and local road capital projects, as well as for transportation demand management (TDM) efforts and planning and program monitoring activities.

- **State Transit Assistance (STA) Funds** – were assumed to increase based on the forecasts of growth in the state Public Transportation Account as provided in the preliminary 2006 STIP Fund Estimate through FY 2011, continuing the same growth rates used in the Fund Estimate for the years beyond 2011.

- **Traffic Congestion Relief Program (TCRP) Funds** – were assumed to be available for specific projects as the projects are ready to be delivered. More than $278 million in TCRP funds has been allocated through FY 2006, leaving a balance of approximately $204 million remaining to be allocated.

- **State Highway Operations, Maintenance, and Rehabilitation Funds** – The 2006 Fund Estimate assumes a revenue constrained funding level of $1.8 billion for Caltrans' State Highway Operations and Protection Program (SHOPP) Capital Outlay and nearly $500 million for support in FY 2006. These figures have been escalated by Caltrans from that fiscal year forward. At this time, the Fund Estimate has assumed that over 90 percent of the State Highway Account (SHA) revenues will be available to meet Caltrans' identified needs for state highway operations and maintenance needs. By state law, these expenditures are given priority over new construction and are funded "off the top" of the SHA before any funding for new construction projects is allocated. The 2006 Fund Estimate assumes that meeting the SHOPP needs will require this high level of SHA funds. For state highway safety, rehabilitation, and operations needs, funds were assumed to be available through SHOPP at the current level of $50 million per year, with a two percent per year real growth based on recent trends. To obtain the regional funding level for the SHOPP, a historical proportional factor is applied to this statewide revenue constrained figure. Costs for SHOPP-eligible projects were constrained to the estimated funds available.

The 2006 base year estimates of $9.3 million per year for operations and administration costs and $49.9 million per year for maintenance revenues have been increased at three percent per year to reflect a gradual increase in these costs above the rate of inflation as the size of the system to be maintained grows over time. These estimates were derived from a survey of historical allocations that Caltrans has received for these activities.

Federal Revenues

- **FTA Discretionary (Section 5309) Funds** – were assumed through FY 2006 based on the amounts identified in the Federal Transit Administration (FTA) Full Funding Grant Agreements (FFGA) for the Mission Valley East Light Rail Transit (LRT) project and the SPRINTER rail project, and other existing bus earmarks. For FY 2007 through 2009, it was assumed that the region would receive a population-based share of the national Section 5309 levels identified in the recently passed SAFETEA-LU, and beyond 2009 the San Diego share has been increased at five percent per year. The San Diego region's population is about one percent of the national total. However, for this revenue constrained scenario, a share of discretionary funds equal to 0.45 percent of the national total was assumed based on the San Diego region's receipts of bus program earmarks over the last five years.

- **FTA Formula (Section 5307 and 5309) Funds** – include the Section 5307 formula funds as well as the Rail Modernization formula funds under the Section 5309 program. These funds were assumed to grow based on the guaranteed funding levels specified in the federal SAFETEA-LU through FY 2009 and at five percent per year thereafter. Both of these funding sources may be used for capital or preventive maintenance.

- **Surface Transportation Program (STP) Funds** – the Regional STP fund estimates were based on the current trends in actual annual apportionments consistent with SAFETEA-LU. The estimates for the period of the federal reauthorization were provided by Caltrans, through which the funds are subvented. Caltrans also recommended an assumed growth rate beyond 2009 of two percent per year. These funds are flexible and may be used for a wide range of capital projects including highway, transit improvements, and other purposes.

- **Congestion Mitigation and Air Quality (CMAQ) Funds** – the CMAQ fund estimates were based on the current trends in actual annual apportionments consistent with SAFETEA-LU. The estimates for the period of the federal reauthorization were provided by Caltrans, through which the funds are subvented. Caltrans also recommended an assumed growth rate beyond 2009 of two percent per year. These funds are flexible and may be used for a wide range of capital projects and TDM activities, with the exception of roadway improvements that provide increased capacity for single-occupant vehicles.

- **Miscellaneous Federal/State/Private/Other Capital Revenues** – there are a variety of smaller annual state and federal programs as well as periodic "demonstration" program funds that provide additional funding for the region's transportation improvements on a semi-regular basis. It was assumed that about $42 million per year would be available from such sources. Based on historical trends, it was assumed that 78 percent of these funds would come from highway resources and 22 percent from transit programs.

FIGURE 3.2—MAJOR PROJECT EXPENDITURES/REVENUE CONSTRAINED SCENARIO
($35.6 Billion)

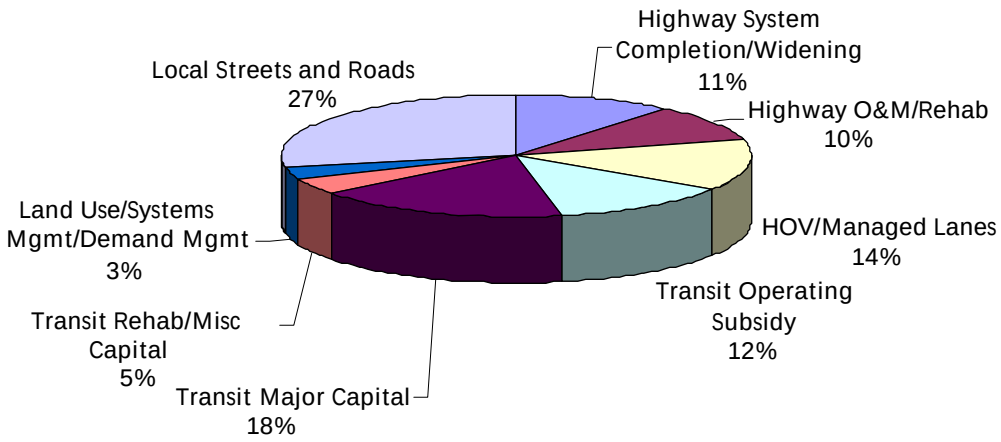


TABLE 3.1—MAJOR REVENUE SOURCES/REVENUE CONSTRAINED SCENARIO

REVENUE SOURCES	ESTIMATED REVENUE ($ IN MILLIONS)			
	FY 2005-2010	**FY 2011-2020**	**FY 2021-2030**	**FY 2005-2030**
Local				
TransNet Cash	$1,352	$1,011	$1,191	$3,554
TransNet Bond Proceeds	$351	$3,518	$1,192	$5,061
Transportation Development Act (TDA)	$691	$1,402	$1,718	$3,811
City/County Local Gas Taxes	$613	$892	$720	$2,225
General Fund/Misc. Local Road Funds	$1,794	$2,854	$2,693	$7,341
Toll Road Funding (SR 241)	$350	$150	$0	$500
Miscellaneous/Carryover from Prior Years	$850	$93	$88	$1,031
Subtotal	$6,001	$9,920	$7,602	$23,523
State				
State Transportation Improvement Program (STIP)/Traffic Congestion Relief Program (TCRP)	$425	$608	$820	$1,853
Proposition 42	$103	$455	$520	$1,078
State Transit Assistance (STA) Program	$104	$182	$191	$477
State Highway Account Funds for Operations & Maintenance (O&M) Rehab.	$750	$1,396	$1,465	$3,611
Miscellaneous/Carryover from Prior Years	$435	$178	$200	$813
Subtotal	$1,817	$2,819	$3,196	$7,832
Federal				
Federal Transit Administration (FTA) Discretionary	$243	$42	$52	$337
Federal Transit Administration Formula	$375	$707	$808	$1,890
Regional Surface Transportation Program (RSTP)/ Congestion Mitigation and Air Quality (CMAQ) Program	$354	$530	$454	$1,338
Miscellaneous/Carryover from Prior Years	$402	$172	$197	$771
Subtotal	$1,374	$1,451	$1,511	$4,336
Total	**$9,192**	**$14,190**	**$12,309**	**$35,691**

TABLE 3.2—MAJOR EXPENDITURES/REVENUE CONSTRAINED SCENARIO

PROJECT CATEGORIES		ESTIMATED COST ($ IN MILLIONS)			
		FY 2005-2010	FY 2011-2020	FY 2021-2030	FY 2005-2030
Systems Development & Operations					
Highways					
Managed Lane/High-Occupancy-Vehicle (HOV) Facilities		$929	$3,467	$420	$4,816
System Completion/Widening Projects		$2,516	$812	$483	$3,811
Operations		$55	$95	$99	$249
Maintenance		$294	$509	$535	$1,338
Rehabilitation		$402	$792	$830	$2,024
	Subtotal	$4,196	$5,675	$2,367	$12,238
Transit					
Major New Facilities		$1,171	$1,953	$3,110	$6,234
Miscellaneous Capital/Rehabilitation/Replacement		$248	$910	$445	$1,603
Operating Subsidies		$593	$1,721	$2,117	$4,431
	Subtotal	$2,012	$4,584	$5,672	$12,268
Local Streets and Roads					
New Facility Construction		$1,100	$1,770	$1,720	$4,590
Regional Arterials		$80	$170	$170	$420
Operations & Maintenance (O&M)/Rehabilitation		$1,180	$1,910	$1,890	$4,980
	Subtotal	$2,360	$3,850	$3,780	$9,990
Land Use/Systems Management/Demand Management					
Smart Growth Incentive Program		$31	$60	$75	$166
Bicycle/Pedestrian Improvements		$29	$105	$136	$270
Transportation Systems Management		$107	$185	$197	$489
Transportation Demand Management		$33	$56	$62	$151
	Subtotal	$200	$406	$470	$1,076
Total		**$8,768**	**$14,515**	**$12,289**	**$35,572**

ACTIONS

The following actions support the Financial Strategies Chapter recommendations.

FINANCIAL STRATEGIES	
Proposed Actions	**Responsible Parties**
General Legislative and Funding Actions	
1. Maximize opportunities to leverage local transportation sales tax revenues to attract additional state and federal funds to the region for transportation and related infrastructure improvements.	SANDAG, local agencies
2. Support federal transportation legislation that provides for the following principles: a. Ensuring stable and consistent funding levels for highway and transit programs. b. Maintaining budget firewalls to protect the Trust Fund balances for transportation expenditure purposes and ensuring that transportation programs are not negatively impacted by the Revenue Aligned Budget Authority. c. Maintaining or increasing the level of revenue flowing into the Trust Fund by increasing the federal gas tax rate and/or eliminating or reducing transfers of tax exemptions that shift transportation revenues to other purposes. d. Ensuring adequate levels of funding to allow regions to continue to achieve levels of air quality attainment. e. Maximizing flexibility of federal spending by consolidating federal categorical programs. f. Providing for the continuation, expansion, and flexibility of transit funding to ensure maintenance and expansion of existing systems.	SANDAG
3. Support state transportation legislation that provides for the following principles: a. Increasing state highway revenues as needed to maintain, rehabilitate, and operate the existing state highway system, to match all available federal highway funds, and to fully fund all new construction and right-of-way projects identified in the current State and Regional Transportation Improvement Programs (TIPs), and also to substantially increase funding for future STIP periods. b. Ensuring that funding from transportation-specific programs such as Proposition 42 and Public Transportation Account spillover revenues are not diverted from the transportation purposes.	SANDAG

FINANCIAL STRATEGIES	
Proposed Actions	**Responsible Parties**
c. Ensuring that any reevaluation of the present formula "County Share" funding provisions and/or any other revenue distribution formula does not penalize counties that provide local sales tax or other local funding to state highway projects.	
d. Establishing state/local matching programs or other programs to reward counties that have implemented local sales taxes or other major local funding sources for transportation improvements.	
e. Sharing of both diesel fuel tax revenues and truck weight fees with local cities and counties, and with Caltrans.	
f. Increasing transit revenues to support transit operating and capital improvements, including transit guideway projects.	
4. Support legislative financial incentives that encourage the linkage between transportation, land use, housing, environment, and the economy.	SANDAG
5. Support mechanisms that leverage federal, state, and local dollars such as public/private partnerships and development fees.	SANDAG
6. Support efforts that expedite transportation project delivery such as design-build, construction management at risk, and other alternative delivery methods.	SANDAG
7. Support maximization of highway, road, and railroad capacity through the implementation of value pricing, use of freeway shoulder lanes and other priority treatments, and other mechanisms that provide for more efficient use of highways, roads, and railroads.	SANDAG
8. Support the continuation or establishment of programs that protect federal and state-owned or funded assets such as the interstate, state routes, and railroad corridors.	SANDAG
9. Support programs and policies that recognizing that goods movement is a critical factor in our transportation corridors, highways, roads, and railroads.	SANDAG
Local Jurisdiction Actions	
10. Maintain current levels of local general fund and other local discretionary fund support to the local street and road program so that any new or increased revenues to the local street and road program will augment and not supplant current revenues.	Local jurisdictions

FINANCIAL STRATEGIES	
Proposed Actions	**Responsible Parties**
Transit Actions	
11. Aggressively pursue the continuation and expansion of existing sources of transit funding and support modifications to those sources to ensure full utilization and maximum flexibility.	SANDAG, transit operators
12. Work with local, state, and federal officials to ensure that the region receives an equitable share of available discretionary transit funds.	SANDAG, transit operators
13. Adjust fare levels and productivity as appropriate and as needed to maintain and improve farebox recovery levels over time in order to maximize the level of transit service that can be provided.	SANDAG, transit operators
14. Pursue private sector involvement in the funding of transit facility development and operation through developer contributions, benefit assessment districts, joint development and value capture projects, and other efforts to contribute toward unfunded regional transit facilities.	SANDAG, transit operators, and local jurisdictions

CHAPTER 4
SYSTEMS DEVELOPMENT: MORE TRAVEL CHOICES

This Chapter describes the priorities for regional transportation infrastructure and service improvements of the 2006 Revenue Constrained Plan. It includes sections on transit, highways and arterials, intercity rail, border improvements, goods movement and intermodal facilities, aviation, regional bikeways, and other non-motorized alternatives.

The existing regional network consists of 610 miles of highways (including 16 miles of HOV lanes), 94 miles of regional transit service, and more than 760 miles of regional arterials.

CHAPTER CONTENTS

DEVELOPING THE REVENUE CONSTRAINED NETWORK

The 2006 Revenue Constrained Plan is based on the Revenue Constrained network included in the MOBILITY 2030 Plan adopted in 2003. In addition to the projects and services included in the previous revenue constrained network, the updated network advances those projects identified in the *TransNet* Early Action Program (EAP), which was approved by the SANDAG Board of Directors in January 2005. Additional transit components to the EAP were approved in May 2005. Several projects, programs, and services that also are part of the *TransNet* Program of Projects are not in the 2006 Revenue Constrained Plan and would be implemented beyond 2030, since the *TransNet* extension is in effect until 2048.

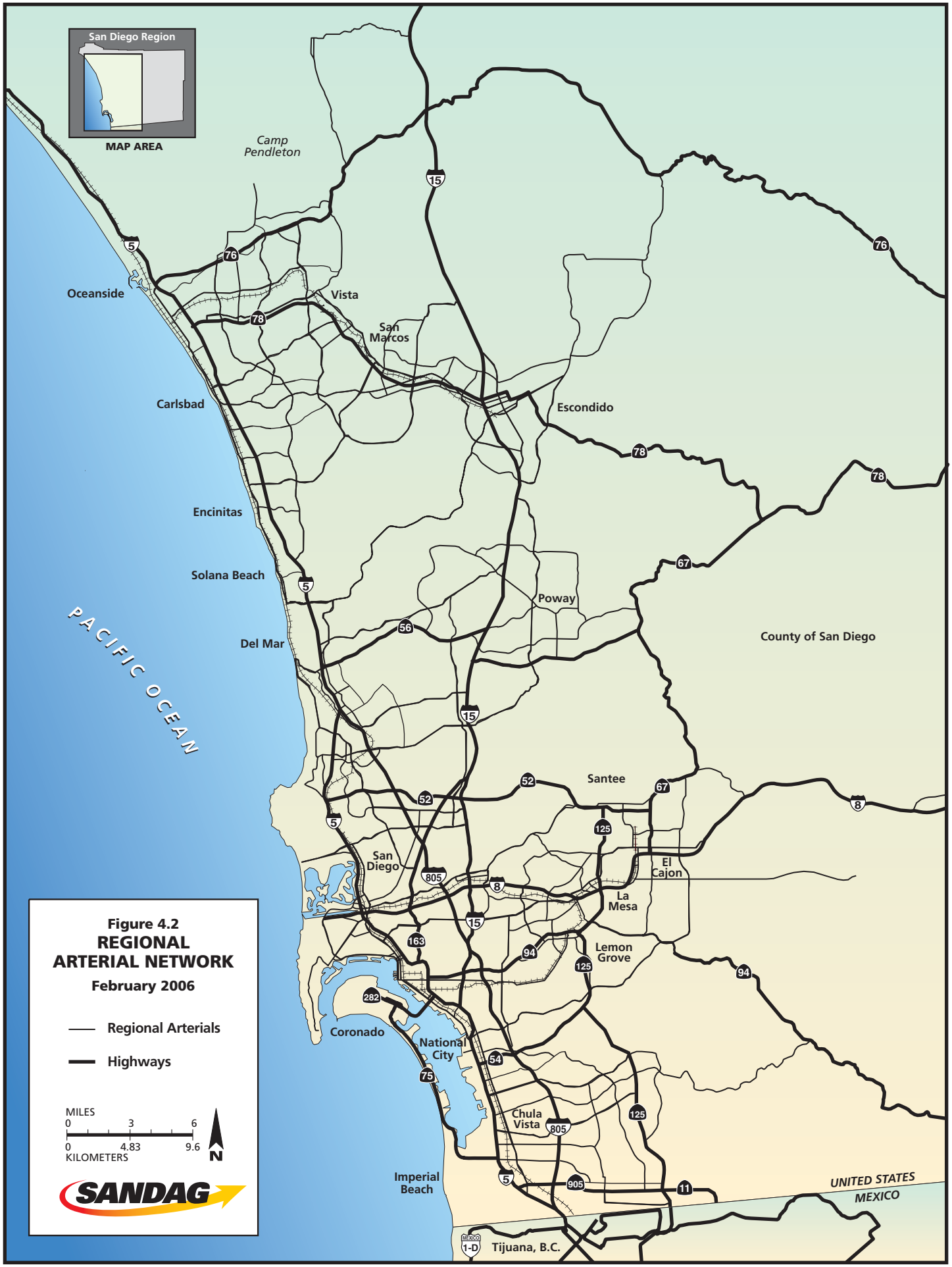
The concept of the EAP is to "jump-start" the implementation of several key projects prior to the beginning of *TransNet* extension in FY 2009, with the objective of completing those projects within the first five to seven years of the new program. Table 4.1 describes the projects included in the *TransNet* EAP.

Figure 4.1 illustrates the Revenue Constrained Network. It includes the major highway projects, freeway and HOV connectors, corridor and regional transit routes, as well as the regional arterial system. The regional arterial system is clearly defined in Figure 4.2 and, as part of the local street and road network, works in conjunction with the system of highways and transit services to provide a significant amount of mobility throughout the region.

TABLE 4.1—*TRANSNET* EARLY ACTION PROGRAM – PROJECT DESCRIPTIONS

EARLY ACTION PROJECT	DESCRIPTION
I-5 HOV Lane Extension	Extend northbound HOV lane to Manchester Avenue, construct southbound HOV lane between Manchester Avenue and I-805
I-5 Lomas Santa Fe Interchange	Reconfigure on-ramps and off-ramps, modify local circulation
I-5 North Coast	Complete environmental document for I-5 widening between La Jolla Village Drive and Vandegrift Boulevard
I-15 BRT Stations (SR 163 to SR 78)	Modify Escondido transit center, construct transit centers at Del Lago, Rancho Bernardo, Sabre Springs, and Mira Mesa
I-15 BRT DARs (Hale & Hillery)	Construct direct access ramps (DARs) at Hale Avenue and Hillery Drive
I-15 BRT Stations (Downtown to SR 163) and Service	Construct transit centers at University Avenue and El Cajon Boulevard, modify Downtown transit centers, BRT service between Escondido and Downtown San Diego
I-15 FasTrak™	Install and operate managed lane technology between SR 163 and SR 78
I-15 Middle (SR 56 to Centre City Pkwy)	Cover cost increases including purchase of the moveable barrier, noise barrier, and direct access ramps
I-15 North (Centre City Pkwy to SR 78)	Construct four managed lanes with fixed median barrier, add auxiliary lanes
I-15 South (SR 163 to SR 56)	Construct four managed lanes with moveable median barrier, add auxiliary lanes
I-805 North (SR 52 to I-5)	Complete environmental document for I-805 widening
I-805 South (SR 905 to SR 94)	Complete environmental document for I-805 widening
Mid-Coast LRT	Construct and operate LRT service between Old Town transit center, University of California at San Diego (UCSD), and University Towne Centre (UTC)
Otay BRT (Phase 1)	BRT service between Otay Mesa and Downtown San Diego
SR 52 (SR 125 to SR 67)	Construct four-lane freeway between SR 125 and SR 67
SR 52 Westbound Truck Lane	Extend general purpose lane from 1.4 miles east of Santo Road to I-15
SR 52 Managed Lanes (I-805 to SR 125)	Construct two managed lanes
SR 76 (Melrose to Mission Road)	Widen from two lanes to four lanes
SR 76 (Mission to I-15)	Widen from two lanes to four lanes
SR 76 Environmental Enhancement	Environmental enhancements for SR 76 widening between Mission Road and I-15
Super Loop	High-frequency circulator route in University City serving UCSD and UTC


Riverside County
Orange County
San Diego County
Northern Extent
0 3 6
MILES
241
5
San Diego Region
MAP AREA
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Poway
County of San Diego
Santee
El Cajon
La Mesa
Lemon Grove
San Diego
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
PACIFIC OCEAN
UNITED STATES
MEXICO
Figure 4.1
2030 REVENUE CONSTRAINED NETWORK (2006 UPDATE)
February 2006
Highways - HOV/Managed Lanes
Transit
Highways - General Purpose Lanes
Highways - Access Improvements
HOV Connectors
Freeway Connectors
MILES
0 3 6
0 4.83 9.6
KILOMETERS
N
SANDAG


San Diego Region
MAP AREA
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
PACIFIC OCEAN
Poway
County of San Diego
Santee
El Cajon
La Mesa
Lemon Grove
San Diego
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO
Figure 4.2
REGIONAL ARTERIAL NETWORK
February 2006
Regional Arterials
Highways
MILES
0 3 6
0 4.83 9.6
KILOMETERS
N
SANDAG

REGIONAL TRANSIT VISION

The Regional Transit Vision (RTV) calls for a network of fast, flexible, reliable, safe, and convenient transit services that connect our homes to the region's major employment centers and major destinations. The 2006 Revenue Constrained Plan includes 11 of the RTV's 38 routes.

The Regional Transit Vision calls for a network of fast, flexible, reliable, safe, and convenient transit services that connect our homes to the region's major employment centers and major destinations.

These proposed services showcase the integration of public transportation and local land uses. The new routes operate at higher speeds than current transit routes. Stations would be spaced farther apart than current transit services, and there would be priority treatments on highways and arterials in order to attain these higher speeds and ultimately make transit more competitive with the automobile. In our local communities, stations must be integrated into activity centers. These stations will be pedestrian- and bicycle-friendly, and serve as pleasant wait environments for transit customers.

There is particular attention to the transit customer in the RTP. The proposed transit services take advantage of a new generation of advance design vehicles, which have the flexibility of buses and the look and feel of rail. These low-floor vehicles along with "smart fare cards" and upgraded stations allow for easier and speedier boarding. Real-time information using "next vehicle" technology will let patrons know when the next vehicle will be arriving.

The proposed transit services take advantage of a new generation of advance-design vehicles, which have the flexibility of buses and the look and feel of rail.

A Network of Services

Market research, trip movement analysis, and input from local jurisdictions were used to develop four Regional Transit Vision service concepts. Each transit service concept accommodates distinct market needs, and together provides a network of complementary services to the region.

Regional *Yellow Car* services provide the fastest type of service and are designed to serve longer-distance regional trip-making. Yellow Car services travel at an average of 40 miles per hour and have limited stops. The COASTER commuter rail system is an existing example of Yellow Car service. Regional services take advantage of many of the Managed/HOV facilities included in the RTP. Examples of new Regional services include a route connecting Escondido and the I-15 corridor with Centre City and a route that connects the rapidly growing Otay Ranch area and the I-805 corridor with Centre City.

Corridor *Red Car* services provide rapid, very frequent transit services along the region's major travel corridors. Speeds average 25 miles per hour and stops are more frequent than Yellow Car services. The San Diego Trolley is an existing example of Red Car service. An example of the new Corridor services is the SPRINTER Rail line, which provides service between Oceanside and Escondido along the SR 78 corridor and is proposed to be extended to Westfield Shoppingtown North County.

The two remaining service concepts provide critical feeder and shuttle services to the Yellow and Red Car networks. *Blue Car* services are essentially the local bus network serving shorter-distance trips within our communities with frequent stops. *Green Car* services are local shuttles that circulate through local communities and employment centers to connect people to and from their homes and work sites and the Yellow and Red Car networks.

Table 4.2 lists the phased new Yellow and Red Car transit services and their proposed headways (frequency of service) during peak and off-peak periods, along with proposed service improvements to existing rail services. Table 4.3 lists the phased major capital transit expenditures. The corresponding network of Regional (Yellow Car) and Corridor (Red Car) services included in the 2006 Revenue Constrained Plan is depicted in Figure 4.3.

Updates on the Horizon

Independent Transit Planning Review. In early 2005, SANDAG commissioned an independent review of the concepts outlined in the Regional Transit Vision and MOBILITY 2030. This review is being conducted by a consultant with the help of an international peer review panel of transit experts. This review will determine the most effective and cost-efficient transit service and infrastructure plan for the region for 2030 and beyond.

In addition to a comprehensive review of the Regional Transit Vision and related transit projects, the Independent Transit Planning Review will address the relationship of the Metropolitan Transit System (MTS) Comprehensive Operational Analysis (COA) and North County Transit District (NCTD) Fast Forward Strategic Business Plan to the vision and project plans. Final approval of the Independent Transit Planning Review recommendations is expected in early 2006 and will be incorporated into the 2007 Comprehensive RTP update.

MTS Comprehensive Operational Analysis (COA). In 2004, MTS embarked on the COA to restructure metropolitan area transit services to better address current travel patterns and markets. The goals are to improve the attractiveness and effectiveness of bus and trolley services and achieve long-term financial sustainability through increased ridership and productivity.

TABLE 4.2—PHASED TRANSIT SERVICES –
2006 REVENUE CONSTRAINED PLAN

YEAR [1]	ROUTE	DESCRIPTION	PEAK HEADWAY (MINUTES)	OFF-PEAK HEADWAY (MINUTES)
2010	628	Centre City to Otay Mesa via SR 94/I-805 (Limited Shoulder Use)	15	30
2010	634	UCSD/UTC Super Loop	10	15
2014	510	Increase in Blue Line Service (current headways 7½/15)	7.5	10
2014	610	Escondido to Centre City & SDIA via I-15/SR 94 (Limited Shoulder Use)	10	30
2020	570	Mid-Coast LRT	15	15
2020	611	El Cajon Boulevard to Centre City	10	15
2020	628	Centre City to Otay Mesa via SR 94/I-805	10	10
2030	398	Increase in COASTER Service (current headways 36/120)*	20	60
2030	399	Increase in SPRINTER Rail - North County Fair (Rail) (opening headways 30/30)	15	30
2030	510	Increase in Blue Line Trolley Service	7.5	7.5
2030	520	Increase in Orange Line Trolley Service (current headways 15/15)	7.5	15
2030	530	Increase in Green Line Trolley Service (current headways 15/15)	7.5	15
2030	570	Mid-Coast LRT	7.5	15
2030	610	Escondido to Centre City & SDIA via I-15/SR 94	10	10
2030	621	Coronado & Centre City to Sorrento Mesa via Hillcrest/Genesee Avenue	10	10-30

[1] These projects are included in the 2009, 2010, 2014, 2020, and 2030 analysis years for air quality assessment.

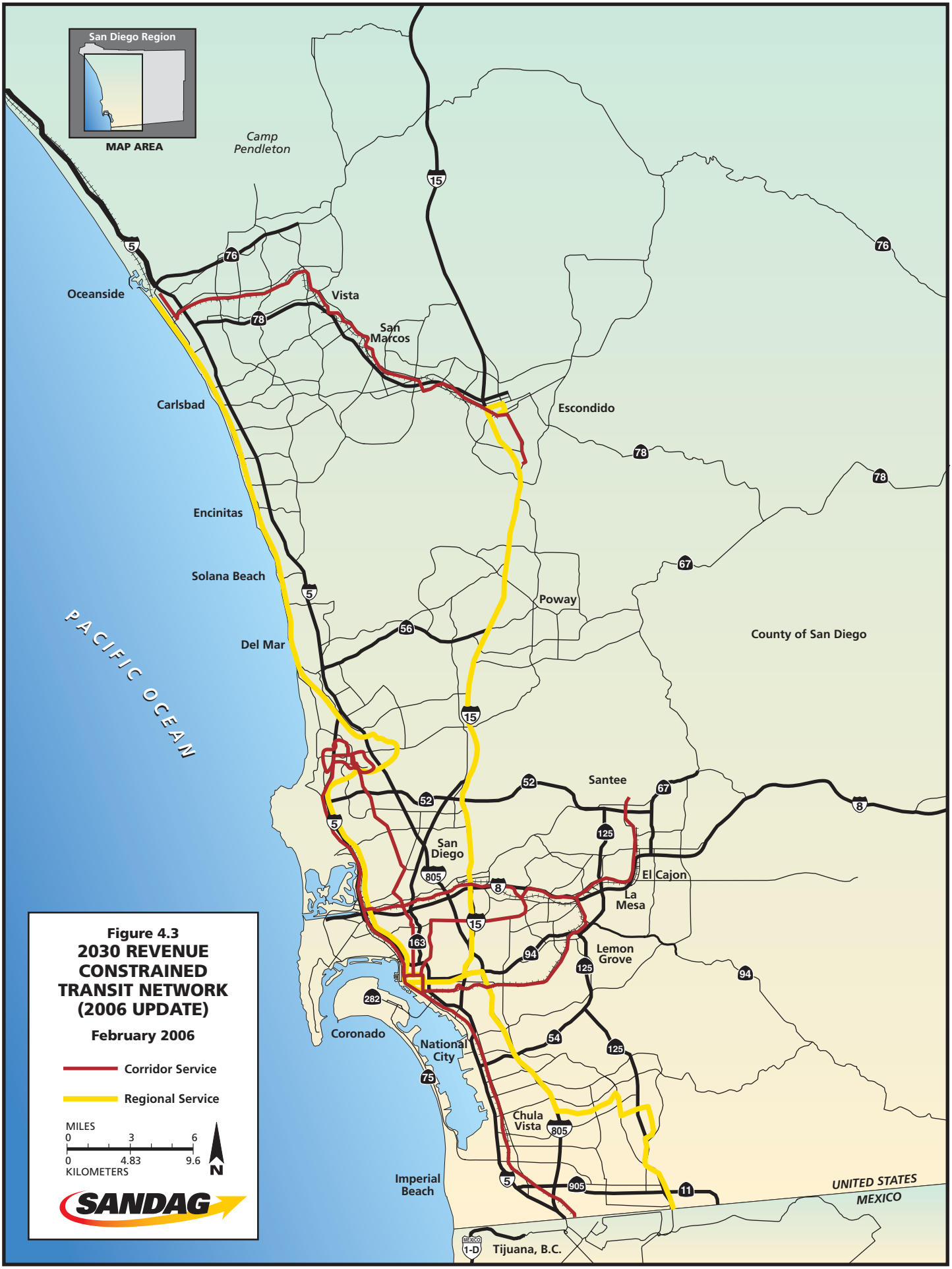
* Average headways

TABLE 4.3—MAJOR TRANSIT EXPENDITURES –
2006 REVENUE CONSTRAINED PLAN [1]
($ MILLIONS)

PROJECT CATEGORIES	2005-2010	2011-2020	2021-2030	TOTAL
Major New Capital Facilities	*$1,171*	*$1,953*	*$3,110*	*$6,234*
SPRINTER Rail	$385	$0	$0	$385
Mid-Coast Light Rail	$0	$940	$0	$940
SPRINTER Rail Double Tracking/ North County Fair Extension	$0	$0	$580	$580
Coastal Rail Double Tracking & Other Improvements*	$0	$0	$703	$703
Coastal Rail Tunnel (Del Mar only) *	$0	$0	$570	$570
Regional Light Rail Grade Separations	$0	$122	$0	$122
Improved/New Major Transit Stations and Centers	$99	$263	$568	$930
Direct Access Ramps to Managed/HOV Lanes	$298	$230	$66	$594
Transit First Priority Measures Funding	$97	$0	$0	$97
Vehicles for New Services	$58	$345	$375	$778
Arterial BRT Transit Priority Improvements	$234	$53	$248	$535
Operating Subsidies	*$593*	*$1,721*	*$2,117*	*$4,431*
Existing Service	$588	$1,617	$1,617	$3,822
New/Improved Service	$5	$104	$500	$609
Rehab./Replacement/Miscellaneous Capital	*$248*	*$910*	*$445*	*$1,603*
TOTAL	**$2,012**	**$4,584**	**$5,672**	**$12,268**

[1] These projects are included in the 2009, 2010, 2014, 2020, and 2030 analysis years for air quality assessment

* Funding from state/federal discretionary transportation sources


San Diego Region
MAP AREA
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Poway
County of San Diego
PACIFIC OCEAN
Santee
San Diego
El Cajon
La Mesa
Lemon Grove
Coronado
National City
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO
Figure 4.3
2030 REVENUE CONSTRAINED TRANSIT NETWORK (2006 UPDATE)
February 2006
Corridor Service
Regional Service
MILES
0 3 6
0 4.83 9.6
KILOMETERS
N
SANDAG

The COA is primarily concerned with improvements to existing transit services over the short- and mid-term. A number of service changes were implemented in July 2005 as part of Phase 1 and MTS is currently developing the more substantial restructuring in Phase 2. The latter is scheduled for completion in early 2006.

As new corridors are served by more innovative transit services, including bus rapid transit (BRT), there will be opportunities to modify existing services and convert operating funds from existing to new services. These modifications will be evaluated as more detailed corridor planning is completed and as new services are brought on-line.

Fifty-six percent (56%) of total transit capital funding is dedicated to the new, rapid Regional and Corridor services included in the Revenue Constrained Plan, while the remaining 44 percent is invested in existing and planned rail systems, such as the COASTER commuter rail and Trolley.

Implementing the Regional Transit Vision

TransNet Early Action Transit Projects. MTS, NCTD, and SANDAG have worked cooperatively to develop a number of short-range transit projects that will put the Regional Transit Vision on the street for people to experience firsthand. These early action projects are expected to be implemented within the first five to seven years of the *TransNet* Extension program, which begins in FY 2009. Early action projects will reveal the customer experience called for in the Regional Transit Vision, demonstrate the integration of transit and land use policies, and help build public support for future investments. These proposed projects include the Mid-Coast Light Rail, University City Super Loop, and I-805 and I-15 Bus Rapid Transit services, as shown in previous Table 4.1.

The early action transit projects will demonstrate the integration of transit and land use policies, and help build public support for future investments.

Transit First Priority Measures. Preliminary engineering and design studies are underway on many transit priority improvements such as queue jumpers and signal priority. To advance these transit infrastructure improvements once preliminary studies are complete, the Revenue Constrained Plan sets aside $97 million within the next 5 years to fund project capital needs. Candidate corridors include the El Cajon Boulevard and Escondido Rapid Bus corridors.

Regional Rail Grade Separations. Many of the new or improved Yellow and Red Car services included in the 2006 Revenue Constrained Plan will use regional arterials and traverse the street network. As transit service frequency is increased over time, it will become important to examine the need for light rail grade separations at critical intersections throughout the region. Light rail grade separations need to be in place if required to implement the increase in service on the trolley lines. The Revenue Constrained funding scenario includes $122 million for regional rail grade separations. SANDAG has worked with the transit agencies and local jurisdictions to develop a regional evaluation process and criteria to prioritize intersections, such as along the Blue Line Trolley in Chula Vista and the SPRINTER Rail in the North County area. A draft set of criteria has been developed and will be incorporated into the 2007 Comprehensive RTP. The $122 million is intended to fund those top priority projects as determined through this regional evaluation.

The Revenue Constrained Plan includes $122 million for regional rail grade separations.

Transit Center Parking Needs. Providing adequate parking at existing major transit stations as well as at future stations is essential to the success of the Regional Transit Vision. In June 2002, SANDAG conducted a study of parking demand at COASTER commuter rail stations on behalf of NCTD. The study concluded that the lack of adequate parking is a detriment to increased commuter rail ridership and quantified future parking needs at each station. The study showed that 40 percent of COASTER riders drive alone to the station. (This is consistent with other commuter rail operations such as Metrolink, which operates in the Southern California region.) Future BRT projects also will address the need for adequate parking at stations.

The Revenue Constrained Plan includes $930 million of funding for improvements to existing stations serving the COASTER and Trolley and for new Yellow and Red Car stations. Improvements include additional parking, real-time information displays, and other customer features.

The Revenue Constrained Plan includes $930 million of funding for improvements to existing stations serving the COASTER and Trolley as well as for new Yellow and Red Car stations. Proposed improvements include additional parking, real-time information displays, and other customer features that integrate transit stations into community centers.

Freeway/Transit Lane Demonstration Project. Many of the new Regional and Corridor services ultimately take advantage of the Managed/HOV network proposed in the Revenue Constrained Plan. However, for the newer transit services that are moving ahead of the completion of Managed/HOV facilities, the Revenue Constrained Plan assumes that these services would operate on freeway shoulder lanes on a limited basis during congested periods. Limited use of freeway shoulder lanes would allow transit services to bypass traffic "pinch points" and provide competitive travel times. MTS and Caltrans have implemented a demonstration project along a segment of SR 52 to test the use freeway shoulders for transit.

Accessible Transportation. The American with Disabilities Act (ADA) requires that all transit vehicles have wheelchair lifts and other equipment to make them accessible to persons with disabilities. In addition, transit operators must provide a complementary service for those persons who, because of their disabilities, are unable to travel to the transit station.

In compliance with federal and state regulations, all transit vehicles in the region are equipped with lifts and other accessibility features. A complementary paratransit system also is in place, providing curb-to-curb services to those who are ADA-certified eligible.

In addition, the Revenue Constrained Plan supports continued coordination of activities to provide transit to those who are transit-dependent, but who are not eligible for ADA-accessible service, or who are clients of non-profit agencies.

The region's senior citizens also will benefit from a grant program that designates funds from the *TransNet* extension for specialized transportation services for seniors. *TransNet* designates 3.25 percent of the total 16.25 percent in annual transit operating and capital funding for this program, which will yield approximately $1.0 million annually when the program starts in 2008.

In preparation for developing the Senior Transportation Mini-Grant Program funding criteria, SANDAG is conducting a survey of the region's seniors to determine their travel needs and limitations, to locate gaps in service, and to identify areas to improve or develop community-based transportation programs for seniors.

Our coastal rail corridor, a predominantly single-track railway, is shared by commuter and intercity passenger and freight rail services. Facing shares challenges, the Revenue Constrained Plan targets critical improvements in areas that will benefit all users of the coastal rail corridor.

Coastal Rail Improvement Program

Our coastal rail corridor, a predominantly single-track railway, is shared by commuter and intercity passenger and freight rail services. On an annual basis, 2 million commuters ride COASTER trains south or Metrolink trains north from Oceanside using the coastal rail corridor. The corridor is part of Amtrak's second-busiest intercity rail corridor nationwide (carrying another 2.5 million annual passengers), and the coastal corridor is served by Burlington Northern Santa Fe freight rail services. Facing shared challenges, the Revenue Constrained Plan targets critical improvements in areas that will benefit all users of the coastal rail corridor.

The Revenue Constrained Plan includes substantial improvements to the corridor, including the completion of double tracking the rail line between Orange County and Centre City San Diego and a tunnel at Del Mar, conditional upon appropriate environmental impact analyses. Because intercity rail services share the coastal rail corridor with commuter rail and freight operations, the Revenue Constrained Plan assumes that 75 percent of the rail and tunnel improvements will be funded by non-local sources, such as Amtrak or other federal and state revenue sources. For nearly 30 years, the State of California has supported Pacific Surfliner services with both capital and operating assistance. Over this period, 87 percent of capital funding has been contributed by state and federal sources.

The Revenue Constrained Plan includes substantial improvements to the coastal rail corridor, including the completion of double tracking the rail line between Orange County and Centre City San Diego and a tunnel at Del Mar.

Amtrak's intercity passenger rail network connects the region to the rest of the nation with stations at downtown San Diego, Solana Beach, and Oceanside. Our region is part of Amtrak's Pacific Surfliner Corridor, a 351-mile corridor that stretches between San Diego to Los Angeles to San Luis Obispo. The Pacific Surfliner is one of Amtrak's busiest, second only to the Northeast Corridor. Two-thirds of the 2.5 million annual Amtrak passengers use the region's three intercity stations. Figure 4.4 displays the Southern California intercity rail network.

The Los Angeles-San Diego-San Luis Obispo (LOSSAN) Rail Corridor Agency coordinates planning and programming on the coastal rail line. SANDAG, MTS, and NCTD are voting members of LOSSAN along with regional transportation and planning agencies in Orange, Los Angeles, Ventura, Santa Barbara, and San Luis Obispo Counties. LOSSAN sets priorities for improvements in the corridor that will increase the capacity of the rail line and the reliability of service.

NCTD is the owner of the railway between the Orange County line and the southern limits of the City of Del Mar. MTS owns the railway south to the Santa Fe Depot in the City of San Diego. NCTD operates and maintains the entire San Diego County portion of the LOSSAN corridor.

In October 2004, Caltrans completed a Strategic Business Plan for the Los Angeles to San Diego portion of the coastal rail corridor, calling for significant improvements to the Pacific Surfliner. Caltrans also regularly updates its five- and ten-year statewide plans for conventional rail services. These plans are the basis for planned improvements in the coastal rail corridor. Caltrans expects to finalize a programmatic environmental impact report/environmental impact statement for the Los Angeles to San Diego rail corridor by Spring 2006.

Intercity passenger rail service is subsidized by Amtrak, the State of California, and local agencies. Over the past ten years, Amtrak and the State of California have made significant investments in the corridor and have invested more than $1.7 billion statewide, while local agencies have contributed another $500 million. These have resulted in faster, more frequent and convenient service, improved stations, and increased ridership through the coastal corridor.

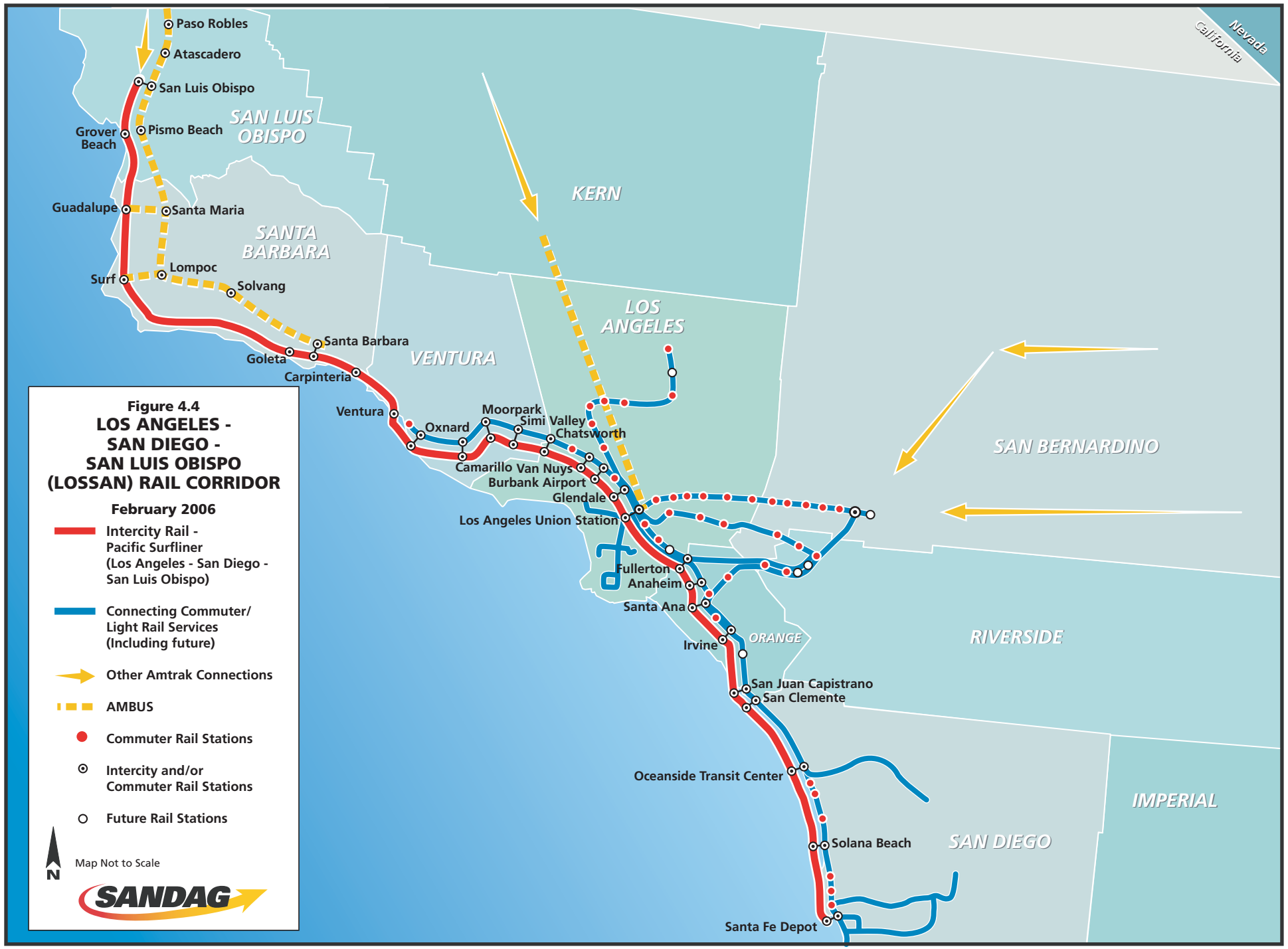
High-Speed Rail Services

High-speed rail trains could reach speeds in excess of 200 miles per hour in more rural areas on a dedicated, fully-grade-separated system, making it possible to travel from San Diego to San Francisco in under four hours.

The California High-Speed Rail Authority (Authority) was created by the California Legislature in 1996 to develop a plan for the construction, operation and financing of a statewide, intercity high-speed passenger rail system. The Authority has developed plans for an 800-mile system, which consists of five corridors connecting the major metropolitan areas of the state. Trains could reach speeds in excess of 200 miles per hour in more rural areas on a dedicated, fully grade-separated system, making it possible to travel from San Diego to San Francisco in under four hours, according to preliminary travel time analyses.

The San Diego region would be connected to the proposed high-speed rail system by two potential corridors—the Inland Corridor and the Coastal Corridor. The Inland Corridor (Los Angeles to San Diego via Riverside County) stretches from the Los Angeles area through the Riverside and Temecula areas to downtown San Diego via Interstate 15. The Coastal Corridor (Los Angeles to San Diego via Orange County) stretches from the Los Angeles area through Orange County and terminates at Irvine. Existing commuter and intercity passenger rail services would feed into the high-speed rail network at this point.

A programmatic environmental impact report/environmental impact statement for the proposed statewide high-speed rail network was certified by the Authority in November 2005.


Paso Robles
Atascadero
San Luis Obispo
SAN LUIS OBISPO
Grover Beach
Pismo Beach
Guadalupe
Santa Maria
SANTA BARBARA
Lompoc
Surf
Solvang
Santa Barbara
Goleta
Carpinteria
VENTURA
Ventura
Oxnard
Moorpark
Simi Valley
Chatsworth
Camarillo
Van Nuys
Burbank Airport
Glendale
Los Angeles Union Station
KERN
LOS ANGELES
SAN BERNARDINO
Nevada
California
Fullerton
Anaheim
Santa Ana
Irvine
ORANGE
RIVERSIDE
San Juan Capistrano
San Clemente
Oceanside Transit Center
IMPERIAL
Solana Beach
SAN DIEGO
Santa Fe Depot
Figure 4.4
LOS ANGELES - SAN DIEGO - SAN LUIS OBISPO (LOSSAN) RAIL CORRIDOR
February 2006
Intercity Rail - Pacific Surfliner (Los Angeles - San Diego - San Luis Obispo)
Connecting Commuter/ Light Rail Services (Including future)
Other Amtrak Connections
AMBUS
Commuter Rail Stations
Intercity and/or Commuter Rail Stations
Future Rail Stations
N
Map Not to Scale
SANDAG

SANDAG is currently underway with a feasibility study of a magnetic levitation (MAGLEV) system between the San Diego region and a potential regional airport in the Imperial Valley. This East/West study also will include a brief comparative analysis of maglev and conventional high-speed rail services. Conclusion of the study is planned for April 2006. Contingent upon a change in federal legislation, SANDAG also plans a feasibility study of maglev along a North/South alignment. Once the necessary funding actions are approved, this study is expected to conclude in 12 to 18 months.

A FLEXIBLE ROADWAY SYSTEM

Roadways in the region serve multiple purposes and accommodate different types of travel. They accommodate transit vehicles, automobiles, movement of freight, and bicycles. The local streets and arterials connecting our communities are typically used for shorter trips, while the region's highways link our homes with major job and activity centers and accommodate our longer trip needs. The 2006 Revenue Constrained Plan recognizes that improvements and capacity enhancements are needed to improve mobility on our highways and regional arterial networks, especially where transit and other alternatives are not as feasible as they are in the region's more urbanized areas.

The Revenue Constrained Plan includes a flexible highway system in which the same lanes used by transit also are utilized by carpools, vanpools, and fee paying patrons.

A *flexible* highway system allows the same lanes used by transit to also be used by carpools, vanpools, and fee-paying patrons (similar to FasTrak™, where fees fund transit services in the I-15 corridor). As shown in Figure 4.5, the 2006 Revenue Constrained Plan includes an extensive network of Managed/HOV lanes, which are critical to many of the proposed regional transit services. These lanes operate at free-flow speeds, provide a quicker ride to HOVs, and several of them also serve solo drivers who want to pay a fee to save time. Table 4.4 summarizes the major capital improvements included in the 2006 Revenue Constrained Plan. Highway and regional arterial improvements in the Revenue Constrained Plan are integrated and coordinated to support as well as complement the expanded transit system. Table 4.5 lists the phasing of highway projects included in the 2006 Revenue Constrained Plan.

Completing Regional Highways

The Revenue Constrained Plan includes the funding to maintain and preserve the existing system (see Chapter 3 – Financial Strategies). Improving the efficiency of the regional transportation system also is a priority, as are Systems Management and Demand Management strategies.

The Revenue Constrained Plan will complete highways such as SR 52 east to SR 67 in Santee, SR 76 in North County, and State Routes 11, 125, and 905 serving the South Bay and our border with Mexico.

The Revenue Constrained Scenario includes completion of missing links in the regional highway system and development of a Managed/HOV lane network that will serve multiple modes. The Revenue Constrained Plan will complete highways such as SR 52 east to SR 67 in Santee, SR 76 in North County, and State Routes 11, 125, and 905 serving the South Bay and our border with Mexico. These same facilities serve both commuter and freight travel in the region. New freeway to freeway connections will be completed along I-5 at its junctions with SR 56 and SR 78, and the interim connectors at State Routes 94/125 will be replaced with a full facility. Highway capital improvements make up $8.6 billion of the Revenue Constrained Plan.

The Managed/HOV Network

Unlike neighboring Orange and Los Angeles Counties to the north, the San Diego region lacks an HOV network on our regional highways. Currently, about 16 miles of mainline HOV facilities exist on portions of Interstates 5, 15, and 805, and SR 54. The Revenue Constrained Plan initiates the development of a robust Managed/HOV network that includes major four-lane managed facilities on Interstates 5, 15, and 805, and HOV facilities on State Routes 52, 54, 94, and 125. The managed lane facilities on Interstates 5 and 805, and SR 52, are modeled after the I-15 Managed Lanes project.

The I-15 model showcases the integration of transit and roadways into a flexible transportation system for the corridor. Currently under development, the I-15 Managed Lanes will create a 20-mile managed lane facility between SR 163 and SR 78. When completed, it will feature a four-lane HOV facility with a movable barrier (similar to the movable barriers on the San Diego-Coronado Bridge), multiple access points to the regular highway lanes, and direct access ramps for buses and other HOVs. High-frequency bus rapid transit services would operate in these lanes, connecting North County areas to job centers at Sorrento Valley/Sorrento Mesa/UTC, Kearny Mesa, and downtown San Diego. The project is an innovative solution to the growing traffic congestion in the corridor that will offer a premium level of service to transit users, ridesharers, and solo paying commuters during rush hours. During the off-peak periods, these same lanes could be used to facilitate goods movement through the region.


Riverside County
Orange County
San Diego County
Northern Extent
4T/6T
0 3 6
MILES
San Diego Region
MAP AREA
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Poway
County of San Diego
PACIFIC OCEAN
San Diego
Santee
El Cajon
La Mesa
Lemon Grove
National City
Coronado
Chula Vista
Imperial Beach
Tijuana, B.C.
UNITED STATES
MEXICO
8F
4C
4E
6F
8F+4ML
8F+4ML/MB
6F+2HOV
6F+2ML (Reversible)
8F+2HOV
10F
14F+4ML
2C
4F
8T
4T
Figure 4.5
2030 REVENUE CONSTRAINED HIGHWAY NETWORK (2006 UPDATE)
February 2006
Managed/HOV Lanes
General Purpose Lanes
Access Improvements
Freeway Connectors
HOV Connectors
C = Conventional Highway
E = Expressway
F = Freeway
HOV = High Occupancy Vehicle
MB = Movable Barrier
ML = Managed Lanes
T = Toll Road
MILES
0 3 6
0 4.83 9.6
KILOMETERS
N
SANDAG

TABLE 4.4—MAJOR CAPITAL IMPROVEMENTS –
2006 REVENUE CONSTRAINED PLAN

Transit Facilities					
SPRINTER Rail					$385
Mid-Coast Light Rail					$940
SPRINTER Rail Double Tracking and North County Fair Extension					$580
Coastal Rail Double Tracking and Other Improvements*					$703
Coastal Rail Tunnel at Del Mar*					$570
Regional Light Rail Grade Separations					$122
Transit First Priority Measures Funding					$97
Improved/New Major Transit Stations and Centers					$930
Direct Access Ramps to Managed/HOV Lanes					$594
Vehicles for New Regional and Corridor Transit Services					$778
Arterial BRT Transit Priority Improvements					$535
				Subtotal	$6,234
HOV and Managed Lane Facilities					
Freeway	**From**	**To**	**Existing**	**Improvements**	
I-5	La Jolla Village Drive	Vandegrift Blvd.	8F/14F	8F/14F + 4ML	$962
I-15	SR 94	SR 163	6F/8F	8F + 2HOV	$247
I-15	SR 163	SR 56	8F + 2ML (R)	8F + 4ML/MB	$342
I-15	SR 56	Centre City Pkwy.	8F	8F + 4ML/MB	$422
I-15	Centre City Pkwy.	SR 78	8F	8F + 4ML	$183
SR 52	I-805	I-125	4F/6F	6F + 2HOV/2ML(R)	$241
SR 54/SR 125	I-805	SR 94	6F/4F+2HOV	6F + 2HOV	$111
SR 94	I-5	I-15	8F	8F + 2HOV	$99
I-805	SR 905	SR 54	8F	8F + 4ML	$469
I-805	SR 54	I-8	8F	8F + 4ML	$555
I-805	Mission Valley Viaduct		8F	8F + 4ML	$308
I-805	I-8	I-5	8F	8F + 4ML	$469
				Subtotal	$4,408
HOV Connectors					
Freeway	**Intersecting Freeway**		**Movement**		
I-5	I-805		North to North & South to South		$222
I-15	SR 94		South to West & East to North		$185
				Subtotal	$407
Highway System Completion					
Freeway	**From**	**To**	**Existing**	**Improvements**	
I-5/I-805	Port of Entry – Mexico		---	Inspection Facility	$25
SR 11	SR 905	Mexico	---	4F	$234
SR 52	SR 125	SR 67	---	4F	$446
SR 125**	SR 905	San Miguel Rd.	---	4T	$635
SR 125	San Miguel Rd.	SR 54	---	4F	$140
SR 905	I-805	Mexico	---	6F	$423
				Subtotal	$1,903

Highway Widening, Arterials, and Freeway Interchanges					
Routes	**From**	**To**	**Existing**	**Improvements**	
I-5	J Street	Sea World Dr.	8F	Access Improvements	$210
I-5	I-805	SR 56	10F	14F	$180
SR 56	I-5	I-15	4F	6F	$49
SR 75/SR 282***	Glorietta Blvd.	Alameda Blvd.	6C	6C + 2TU (Preliminary Engineering only)	$20
SR 76	Melrose Dr.	I-15	2C	4C	$382
SR 125**	Telegraph Cyn.	San Miguel Rd.	4T	8T	$37
SR 125	San Miguel Rd.	SR 54	4F	8F	$37
SR 241**	Orange County	I-5	---	4T/6T	$500
Regional Arterials and Local Access Freeway Interchanges					$420
				Subtotal	$1,835

Freeway Connectors			
Freeway	**Intersecting Freeway**	**Movement**	
I-5	SR 56	West to North & South to East	$173
I-5	SR 78	West to South & South to East	$185
SR 94	SR 125	West to North & South to East	$136
		Subtotal	$494
		Total	**$15,281**

KEY:

C = Conventional Highway Lanes
F = Freeway Lanes
TU = Tunnel
T = Toll Lanes
MB = Movable Barrier
ML = Managed Lanes (HOV & Value Pricing)
HOV = High Occupancy Vehicle Lanes
ML(R) = Managed Lanes (Reversible)

* funding from state/federal discretionary transportation funding sources
** privately funded
*** funding from federal discretionary defense funding sources

TABLE 4.5 – PHASED HIGHWAY PROJECTS – 2006 REVENUE CONSTRAINED PLAN [1]

YEAR BUILT BY	FREEWAY	FROM	TO	EXISTING	IMPROVEMENT	($ MILLIONS)	
						COST	CUMULATIVE COST
2009	I-5	I-805	SR 56	10F	14F	$180	$180
2009	I-15	SR 56	Centre City Pkwy	8F	8F + 4ML/MB	$422	$602
2009	SR 125	SR 905	San Miguel Road	--	4T	$635	$1,237
2009	SR 125	San Miguel Road	SR 54	--	4F	$140	$1,377
2009	SR 905	I-805	Mexico	--	6F	$423	$1,800
2010	I-5/I-805	Port of Entry – Mexico		--	Inspection Facility	$25	$1,825
2010	SR 52	SR 125	SR 67	--	4F	$446	$2,271
2010	SR 75/282	Glorietta Blvd.	Alameda Blvd.	6C	6C+2TU (Preliminary Engineering Only	$20	$2,291
2010	SR 241	Orange County	I-5	--	4T	$350	$2,641
2014	I-15	SR 163	SR 56	8F + 2ML (R)	8F + 4ML/MB	$342	$2,983
2014	I-15	Centre City Pkwy.	SR 78	8F	8F + 4ML	$183	$3,166
2014	SR 52	I-805	SR 125	4F/6F	6F + 2HOV/ML (R)	$241	$3,407
2014	SR 76	Melrose Drive	I-15	2C	4C	$382	$3,789
2020	I-5	J Street	Sea World Drive	8F	Access Improvements	$210	$3,999
2020	I-5	La Jolla Village Dr.	Vandegrift Blvd.	8F/14F	8F/14F + 4ML	$962	$4,961
2020	I-5/SR 56	West to North & South to East		--	Freeway Connectors	$173	$5,134
2020	I-5/I-805	North to North & South to South		--	HOV Connectors	$222	$5,356
2020	I-15	SR 94	SR 163	6F/8F	8F + 2HOV	$247	$5,603
2020	I-15/SR 94	South to West & East to North		--	HOV Connectors	$185	$5,788
2020	SR 56	I-5	I-15	4F	6F	$49	$5,837

YEAR BUILT BY	FREEWAY	FROM	TO	EXISTING	IMPROVEMENT	($ MILLIONS) COST	CUMULATIVE COST
2020	SR 94	I-5	I-15	8F	8F + 2HOV	$99	$5,936
2020	SR 94/SR 125	West to North & South to East		--	Freeway Connectors	$136	$6,072
2020	SR 241*	Orange County	I-5	4T	4T/6T	$150	$6,222
2020	I-805	SR 905	SR 54	8F	8F + 4ML	$469	$6,691
2020	I-805	SR 54	I-8	8F	8F + 4ML	$555	$7,246
2020	I-805	I-8	I-5	8F	8F + 4ML	$469	$7,715
2030	I-5/SR 78	West to South & South to East		--	Freeway Connectors	$185	$7,900
2030	SR 11	SR 905	Mexico	--	4F	$234	$8,134
2030	SR 54/SR 125	I-805	SR 94	6F/4F+2HOV	6F + 2HOV	$111	$8,245
2030	SR 125	Telegraph Cyn.	San Miguel Road	4T	8T	$37	$8,282
2030	SR 125	San Miguel Road	SR 54	4F	8F	$37	$8,319
2030	I-805	Mission Valley Viaduct		8F	8F + 4ML	$308	$8,627

[1] These projects are included in the 2009, 2010, 2014, 2020, and 2030 analysis years for air quality assessment.
* SR 241 - 4 toll lanes from I-5 to Cristianitos interchange; 6 toll lanes from Cristianitos Interchange to Orange County line

KEY:
C = Conventional Highway Lanes
F = Freeway Lanes
TU = Tunnel
T = Toll Lanes
MB = Movable Barrier
ML = Managed Lanes (HOV & Value Pricing)
HOV = High Occupancy Vehicle Lanes
ML(R) = Managed Lanes (Reversible)

In addition to mainline Managed/HOV facilities, the Revenue Constrained Plan includes direct HOV to HOV connectors at the I-5/I-805 merge and at the I-15/SR 94 interchange.

Completing the Arterial Network

Like highways, the arterial network plays a role in improving regional transit as well as serving subregional trips.

The Revenue Constrained Plan funds transit priority treatments on arterials, such as traffic signal priority measures (priority for transit by extending the green phase of the traffic light, for example), "queue jumpers" to bypass bottlenecks on local streets, and grade separations, where needed. The Revenue Constrained Plan includes major transit capital projects, such as transitways, double tracking, and direct access ramps between freeway HOV lanes and major transit stations. These facilities link regional arterials to the Managed/HOV network and transitways at strategic locations like major stations, providing transit vehicles with easy access to the regional network.

The Revenue Constrained Plan funds transit priority treatments on arterials, such as traffic signal priority measures (priority for transit by extending the green phase of the traffic light, for example), "queue jumpers" to bypass bottlenecks on local streets, and grade separations.

Completing the Regional Arterial System is a priority in the Revenue Constrained Plan. The regional arterial system provides critical links to the highway network and serves as alternative routes to the highways themselves. Figure 4.2 illustrates the regional arterial system.

Planned improvements to the regional arterial system are identified in the local circulation elements of the cities and county. Funding is intended to come from the local jurisdictions, which are responsible for improving regional roadways and local streets to meet their residents' needs and mitigate the effects of local land use developments. Proposition 42 funds and the voter-approved $2,000 per dwelling unit for regional arterials (beginning in 2008 with the extension of *TransNet*) would contribute to the construction of these facillties.

The Revenue Constrained Plan assumes additional arterial improvements besides capacity enhancing projects. These include traffic signal coordination, traffic detection systems, transit priority measures, and management systems needs to optimize the arterial network and integrate arterial operations with other modes.

PLANNING ACROSS BORDERS

The Revenue Constrained Plan looks beyond the San Diego region to link transportation and land use planning across our borders with Orange, Riverside, and Imperial Counties, and Baja California, Mexico. The SANDAG Borders Committee provides oversight for binational planning and interregional planning programs under its purview and advises the SANDAG Board of Directors on major interregional planning policy-level matters.

The 2030 Regional Growth Forecast recognizes interregional travel trends and accounts for future housing for our workers both within the San Diego region as well as outside of the region's boundaries.

The last several years have seen a steady increase in interregional and international commuting, as more people are choosing to live in Riverside and Imperial Counties, and Baja California, Mexico, while keeping their jobs here. SANDAG's 2030 Regional Growth Forecast recognizes these travel trends and accounts for future housing for our workers both within the San Diego region as well as outside of the region's boundaries.

I-15 Interregional Partnership Program

The I-15 Interregional Partnership (I-15 IRP) is a voluntary partnership of local officials representing SANDAG and the Western Riverside Council of Governments. The I-15 IRP was formed in 2001 to address the imbalance of jobs and housing that has developed between the San Diego region and southwestern Riverside County in the past decade and the lengthy commute that has resulted. In 2003, the I-15 IRP completed an Existing Conditions report documenting the volume and travel characteristics of interregional commuters along with existing roadway conditions in the I-15 Corridor. In 2004, the I-15 IRP completed a study that identifies short and long-term strategies to address both the causes and impacts caused by the increasing number of interregional commute trips in the corridor.

Today, 41 percent of the vanpools participating in SANDAG's Regional Vanpool Program originate from Riverside County.

Short-term strategies, most of which are currently underway, include promotion of transportation demand management (TDM) strategies, including interregional coordination of rideshare programs between Riverside County Transportation Commission (RCTC) and SANDAG, implementing park and ride lots along the I-15 corridor, and joint marketing and promotion of alternative transportation services (e.g., carpools, vanpools, and public transit) targeting solo commuters in the corridor.

There already is a strong market for these types of services. As of December 2005, 204 of the 475 vanpools (43 percent) participating in SANDAG's Regional Vanpool Program originated from Riverside County. The Riverside Transit Agency (RTA) began commuter express bus service in 2003, and there is private transit service connecting Riverside County residents with jobs in the San Diego region.

The 2006 Revenue Constrained Plan includes Managed/HOV lanes on I-15 north to SR 78. Along with planned HOV lanes in Riverside, the 2006 Revenue Constrained Plan supports ridesharing and transit in the north I-15 corridor.

In 2005, SANDAG received a grant for Phase Two of the I-15 IRP. Phase Two will focus on implementation of economic development, transportation, and housing strategies that were identified in the first phase of the project.

Binational Transportation

To accommodate the dynamic border transportation system, the Revenue Constrained Plan includes major projects to improve access to border crossings. Long-term forecasts developed using the San Diego Region-Baja California cross-border travel demand model project that cross-border vehicle traffic will more than double between 1995 and 2020.

To accommodate the dynamic border transportation system, the Revenue Constrained Plan includes major projects to improve access to border crossings.

International Border Crossings. The San Diego region shares a common international border with the Municipalities of Tijuana and Tecate in the State of Baja California, Mexico. The population of the border area of San Diego and Tijuana-Tecate surpassed 4.5 million people in 2000. Three ports of entry serve the region—San Ysidro, Otay Mesa, and Tecate. Those who cross the border into the United States often face long and unpredictable waits.

The U.S. Department of Homeland Security (DHS) was created in 2002 and consolidated the principal border and transportation security agencies—the Immigration and Naturalization Service, U.S. Customs Service, U.S. Coast Guard, Animal and Plant Health Inspection Service, and the Transportation Security Agency. The mission of DHS includes ensuring safe and secure borders, welcoming lawful immigrants and visitors, and promoting the free-flow of commerce.

San Ysidro is the busiest land port of entry in the western hemisphere. It is the region's primary gate for auto and pedestrian traffic in both directions. More than 48,000 passenger vehicles cross daily into San Diego at this port of entry. About 26,000 pedestrians travel through this border crossing into San Diego daily. Most people who cross northbound on foot or on their bicycles use the Trolley or buses to complete their journey.

In 2004, Otay Mesa handled more than $22 billion dollars worth of freight, making this commercial crossing the busiest along the California-Baja California border.

Commercial truck traffic uses the Otay Mesa and Tecate ports of entry. The Otay Mesa port has 100 bays for handling truck inspections and serves autos and pedestrians as well. Truck, auto, and pedestrian traffic all use the same facility at Tecate. The Otay Mesa commercial crossing continues to rank third in terms of the dollar value of trade that passes through it along the U.S.-Mexico border (after Laredo-Nuevo Laredo and El Paso-Ciudad Juarez in Texas). In 2004, Otay Mesa handled more than $22 billion dollars worth of freight, making this commercial crossing the busiest along the California-Baja California border. The Tecate port of entry handled another $1 billion in trade in 2004. The Caltrans Global Gateways Development Program (GGDP)[1] identified the California/Mexico border region as a major international trade region, and the Otay Mesa port of entry as one of the key border crossings.

The existing ports of entry infrastructure is already taxed, and growth in trade is expected to continue across the border in both directions over time. Short-term circulation improvements to alleviate existing congested conditions for southbound commercial vehicles at the Otay Mesa port of entry are in progress at this time.

A fourth border crossing is being planned at East Otay Mesa to improve traffic flows between the two countries and to provide an alternate entry for vehicles and commercial trucks.

Two miles east of Otay Mesa, a fourth border crossing is being planned at East Otay Mesa to improve traffic flows between the two countries and to provide an alternate entry for vehicles and commercial trucks. This new port of entry and SR 11, a four-mile, four-lane state highway, will connect the U.S./Mexico border to key regional, state, and international highways, and Imperial County to the east. In Mexico, the East Otay Mesa port of entry would connect with the Tijuana-Rosarito Corridor under construction and to the Tijuana-Tecate free and toll roads. In 2001, Caltrans submitted a draft application to the Department of State to initiate the federal review and approval processes for the East Otay Mesa border crossing.

The federal and state governments of the United States and Mexico, the City of San Diego, and the Municipality of Tijuana continue to study various possibilities for the reopening of the closed gate at Virginia Avenue-El Chaparral, located west of the San Ysidro border crossing. Realignment of I-5 and I-805 would be necessary to provide access to the inspection facilities.

[1] Caltrans, *Global Gateways Development Program* (January 2002)

Binational Intermodal Transportation System. Key intermodal components of the binational transportation system include rail, roadways, transit, and port facilities. Rehabilitation and restoration to modern service of the San Diego and Arizona Eastern (SD&AE) Railway will improve the potential market for international and interstate movement of goods in, out, and through the Southern California/Baja California region. In addition to the SD&AE Railway, proposals to expand port facilities at the Ports of San Diego and Ensenada are likely to affect cross-border freight transportation. However, these proposed improvements are not expected to significantly reduce the amount of cross-border truck traffic on the region's highways and arterials. (Railroads typically transport bulk cargo distances greater than 500 miles, while trucks haul cargo to shorter distance markets.)

Rehabilitation and restoration to modern service of the San Diego and Arizona Eastern Railway will improve the potential market for international and interstate movement of goods.

Implementation of the trucking provisions of the North America Free Trade Agreement (NAFTA) to allow trucks from the United States and Mexico freely in each country is still pending. Nevertheless, binational commercial vehicle traffic uses the San Diego regional highway system. In 2004, more than 796,000 trucks crossed northbound at the San Diego region-Baja California border. About 57 percent of these truck trips have other California counties as their final destination, while 21 percent are destined outside of the state. The remaining trucks travel within the San Diego region.

Major highway projects addressing binational transportation needs that are included in the Plan include State Route 905 to connect Interstates 5 and 805 to the Otay Mesa Port of Entry, the future SR 125 tollway that will connect the Otay Mesa Port of Entry with the San Diego regional and interregional highway network, and the future SR 11 that will link to the proposed East Otay Mesa border crossing. Other investments included in the Revenue Constrained Plan on Interstates 5, 8, 15, and 805 will serve these key international trade corridors.

Major highway projects addressing binational transportation needs that are included in the Plan include State Route 905, the future SR 125 tollway, and the future SR 11 that will link to the proposed East Otay Mesa border crossing.

GOODS MOVEMENT AND INTERMODAL FACILITIES

The movement of goods in the San Diego region involves intermodal systems of rail, ports and maritime shipping, air cargo, pipelines and trucks. In an increasingly global economy, optimizing goods movement is vital to the San Diego region's economic competitiveness.

The movement of goods in the San Diego region involves intermodal systems of rail, ports and maritime shipping, air cargo, pipelines, and trucks. In an increasingly global economy, optimizing goods movement is vital to the San Diego region's economic competitiveness. Figure 4.6 shows the location of intermodal facilities in the region.

Caltrans developed the Global Gateways Development Program (GGDP) as a strategy to improve the capacity and efficiency of California's goods movement system. The GGDP focused on high priority seaports, airports, international border crossings, trade corridors, major railroads, and highways. It identified access and intrastate transportation system improvements for potential federal, state, and other funding.

Currently, SANDAG is conducting a study to create a Regional Freight Strategy. With the assistance of a newly formed Freight Working Group, a more comprehensive approach addressing goods movement will be included in the next update of the RTP in 2007.

Rail

The Burlington Northern Santa Fe (BNSF) and the San Diego and Imperial Valley (SDIV) railroads transport rail freight in the San Diego region. BNSF maintains a freight easement over the 62 miles of coastal mainline and the 20-mile branch line between Escondido and Oceanside. The BNSF also interchanges freight with the SDIV and with the U.S. Navy. In 2004, San Diego railroads moved 2.8 million tons of freight (21,600 carloads), an overall increase of 23.2 percent over 2003. The Port of San Diego is the main generator of freight for BNSF in the I-5 corridor south of the greater Los Angeles area. Rail-borne commodities handled at the port consist of soda ash, lumber, and import automobiles.

The SDIV Railroad is a Class II Carrier or "short-haul" railroad. It has been the freight operator on the SD&AE Railway since 1984. In 2001, Carrizo Gorge Railway took over operations between Tijuana and Tecate, Baja California. Main commodities moved include liquefied petroleum gas, lumber, beverages, paper, grain, and sand.

Existing freight service between San Diego and Tecate can be extended to the Imperial Valley by rehabilitating the 70-mile Desert Line portion of the SD&AE, which has been out of service since 1983. In May 2002, the SD&AE and SDIV granted a contract to Carrizo Gorge Railway to repair, operate, and maintain the Desert Line. The connection with the Union Pacific Railroad in Imperial Valley would link San Diego and its port to the rest of the United States and Mexico and improve the region's potential market opportunities.

Existing freight service between San Diego and Tecate can be extended to the Imperial Valley by rehabilitating the 70-mile Desert Line portion of the SD&AE.

A 1999 feasibility study estimated that restoration of the SD&AE Railway for basic service would cost $43 million. This will rehabilitate the Desert Line to handle single-stack intermodal traffic and "conventional" rail carload traffic such as bulk commodities. Planned basic service improvements include an intermodal transfer facility to gather and distribute potential diversions of truck traffic passing through the SD&AE's service territory in the region. To accommodate modern service (at an additional cost of $62.4 million), the rail line would need to be improved to handle modern rail cars, including double-stack platforms and triple-deck automobile carriers, and would need to build supporting facilities including storage yards. In January 2005, the Carrizo Gorge Railway began limited freight service on the Desert Line after completing initial repairs to allow the clear passage of trains. Despite this success, full funding of the rehabilitation effort is still needed to restore the Desert Line to the proposed basic and modern service levels. The Transportation Equity Act for the 21st Century (TEA-21) has provided $10 million toward SD&AE improvements at the San Ysidro Intermodal Yard and for other related purposes.

Maritime Shipping

The Port of San Diego oversees and plans for the development of commerce, navigation, fisheries, and recreation within San Diego Bay and the surrounding tidelands. Maritime commerce is carried out at two marine terminals located on the San Diego Bay—the 10th Avenue Marine Terminal in San Diego and the National City Marine Terminal at 24th Street.

Together, the two marine terminals handle approximately 2.8 million tons of cargo annually[2]. Built in the 1950s, the 10th Avenue Marine Terminal is San Diego's general cargo terminal. It supports cool/frozen storage, break bulk, dry/liquid bulk, and small container operations. National City is the primary West Coast port of entry for Honda, Acura, Volkswagen, Audi, Porsche, Lotus, Bentley, Isuzu, Mitsubishi Fuso, and Hino Motors vehicles. In 2002, approximately 330,000 motor vehicles were handled for distribution by rail and truck throughout the United States.

[2] U.S. Maritime Administration, *Commodity Flows Report, 2004*

Recent terminal improvements, including rail infrastructure, have resulted in more than a 50 percent increase of Port maritime revenues. Lumber is another important commodity handled at the National City Marine Terminal, which is transported by barge and break bulk ships from the Pacific Northwest.

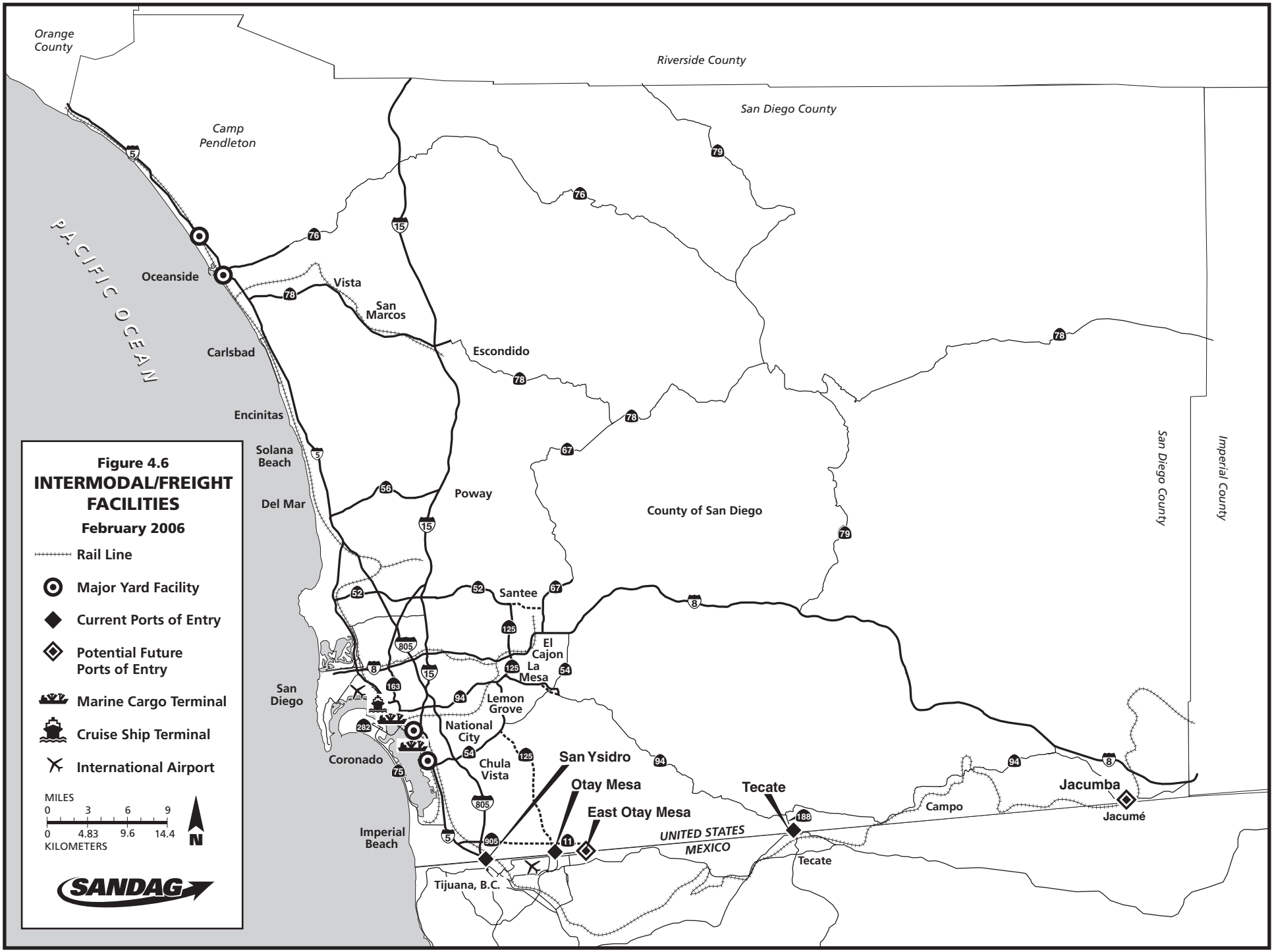
Near-term infrastructure improvements are planned for both marine terminals to increase their efficiency in handling goods. The Port of San Diego's master and strategic plans include developing the 10th Avenue terminal incrementally into a container terminal, including the development of a multi-purpose cargo terminal, continued development of the National City terminal for storage and distribution of automobiles and lumber, and development of alternative railroad service for intermodal cargo users.

Providing ground access is important to the efficient intermodal operation of the marine terminals. SANDAG's Central I-5 Corridor Study proposed key ground access improvements for both terminals.

Marine Terminal Ground Access. Providing ground access is important to the efficient intermodal operation of the marine terminals. In 2003, the Central I-5 Corridor Study evaluated ground access improvements for both terminals. At the 10th Avenue terminal, potential improvements include a grade separation at 28th Street/Harbor Drive, improved terminal access from an elevated Harbor Drive/Crosby Street intersection, and a viaduct directly connecting I-5 to Harbor Drive, facilitating access to and from the north. In 2004, the Marine Terminal Community Committee (MTCC) proposed an alternative viaduct alignment at 32nd Street/ Harbor Drive and I-15. Further analysis, enabled by a Caltrans Partnership Planning Grant, will evaluate the potential alignments of the viaduct, working with the community to minimize local impacts and select a preferred alignment. Proposed projects at the National City terminal include improvements at Civic Center Drive and Bay Marina Drive (24th Street) interchanges, along with an extension of Tidelands Boulevard to Harbor Drive.

Air Cargo

Most air cargo in the San Diego region is handled through San Diego International Airport (SDIA), although a small percentage of it is handled at other general aviation airports. Air cargo activity has grown rapidly at SDIA, increasing at an average annual rate of 8.5 percent from 1980 to 2002. In 2003, SDIA handled 155,000 tons of air cargo, which is typically divided into air freight and air mail. Air freight, including express and small packages, constitutes 80 percent air cargo. Air mail is the other 20 percent. Assuming a range of growth percentages, the 2004 SDIA Airport Activity Forecast projects air cargo tons to reach between 487,000 and 622,000 tons by 2030.


Orange County
Riverside County
San Diego County
Camp Pendleton
PACIFIC OCEAN
Oceanside
Vista
San Marcos
Escondido
Carlsbad
Encinitas
Solana Beach
Del Mar
Poway
County of San Diego
San Diego County
Imperial County
Santee
El Cajon
La Mesa
Lemon Grove
National City
Chula Vista
San Diego
Coronado
Imperial Beach
San Ysidro
Otay Mesa
East Otay Mesa
Tecate
Campo
Jacumba
Jacumé
UNITED STATES
MEXICO
Tijuana, B.C.
Figure 4.6
INTERMODAL/FREIGHT FACILITIES
February 2006
Rail Line
Major Yard Facility
Current Ports of Entry
Potential Future Ports of Entry
Marine Cargo Terminal
Cruise Ship Terminal
International Airport
MILES
0 3 6 9
0 4.83 9.6 14.4
KILOMETERS
N
SANDAG

SDIA's three air cargo terminals house two freight forwarders, Burlington Air Express and LEP Profit International Airlines, and United Airlines and Southwest Air cargo operations. Other air freight operators include Federal Express, Emery Air Freight, United Parcel Service, Airborne Express, Burlington Air Express, and Ryan International. Outbound cargo is sorted and containerized off-site, and then trucked to the airport and loaded directly on the aircraft. Similarly, inbound cargo is loaded directly onto trucks from the aircraft and sorted off-site. The Global Gateways Development Program identified San Diego International Airport as one of the priority global gateways in California. Ground access to SDIA is discussed under the Aviation section later in the chapter.

Commercial Trucking

In the San Diego region, Interstates 5, 805, and 15 are the major north-south corridors that accommodate commercial trucks, while Interstate 8 and State Routes 94/125, and 905/Otay Mesa Road are the region's primary east-west truck corridors. These north-south and east-west corridors serve both domestic and international trade routes.

The Revenue Constrained Plan includes several improvements that will benefit the major commercial vehicle corridors. Major capital improvements are slated for Interstates 5, 8, 15, and 805, and State Routes 11, 94, 125, and 905 (see earlier Table 4.4). These include widening projects to accommodate Managed/HOV and general purpose lanes to improve mobility, accessibility, and contribute to more reliable travel times for commercial trucks in addition to the region's commuters. All the above highways were identified in the GGDP as priority global gateways in California.

AVIATION

The existing airport system in the San Diego region is composed of 16 airports, including one major commercial facility (San Diego International Airport), four military airports, and 11 general aviation airports. Table 4.6 lists the commercial and general aviation airports in the region.

The Airport Site Selection Program is evaluating long-term solutions to meet projected 2030 commercial air passenger and air cargo demand in the San Diego region. The San Diego County Regional Airport Authority is scheduled to take a proposed solution to the voters in November 2006.

Airport Planning. The Airport Site Selection Program is currently evaluating long-term solutions to meet projected 2030 commercial air passenger and air cargo demand in the San Diego region. Another important program objective is to maximize for the region the potential economic benefit of meeting the air service demand. The program is being conducted by the San Diego County Regional Airport Authority (SDCRAA), the regional government entity with jurisdiction over airport planning.

The Airport Economic Analysis, conducted in 2001, quantified the role that San Diego International Airport (SDIA) plays in the regional economy. The report estimated that the region's economy could miss out on $29.6 billion to $93.8 billion of Gross Regional Product by 2030 if airport facilities fall short of meeting the regional demand for air passenger and air cargo services.

Unconstrained passenger demand would roughly double over today's volume, estimated as high as 32.7 million in 2030. Unconstrained cargo demand would grow more quickly, reaching 622,000 tons by 2030. Freight volumes continued to increase over the last five years, and passenger volumes have surpassed the levels reached before September 2001.

The projected figures for air passenger and air cargo demand cannot be accommodated at San Diego International Airport, given its limited options for expansion.

The projected figures for air passenger and air cargo demand cannot be accommodated at SDIA, given its limited options for expansion. This includes potential on-site improvements under consideration as the Airport Authority prepares an Airport Master Plan for SDIA. The Airport Master Plan and EIR are scheduled for release in 2006. Pending completion of the Airport Site Selection Program and the result of the future ballot measure, the networks in the 2006 Revenue Constrained Plan assume that SDIA will continue to serve as the region's primary commercial airport. Future RTP updates will incorporate the region's decision on a regional airport solution.

SDIA Ground Access. Providing ground access is critical to the successful operation of the airport. The primary access to the terminals on the south side of SDIA is via North Harbor Drive. The updated Airport Master Plan is now being prepared by the Airport Authority, and focuses on expanded facilities at the existing south terminals. The Airport Master Plan also will address improved local circulation, as traffic congestion is one of the first critical issues the growing airport must overcome.

Longer-term ground access improvements to SDIA were evaluated in the Central I-5 Corridor Study. Recommended improvements included direct freeway ramps from I-5 to Pacific Highway, exclusive bus/HOV lanes between the Old Town Transit Center and the airport, and intersection upgrades on Laurel Street. These improvements should be reevaluated, as they were based on earlier Airport Master Plan layouts that included a new north terminal on Pacific Highway. Any future recommendations from the Airport Authority regarding alternative airport sites will be incorporated into future regional network analyses, as appropriate.

TABLE 4.6—COMMERCIAL AND GENERAL AVIATION AIRPORTS IN THE SAN DIEGO REGION

AIRPORT	TYPE	OWNER	MASTER PLAN DATE	PLANNED IMPROVEMENTS
Agua Caliente Springs Airport	General Aviation	County of San Diego	None	None planned
Borrego Valley Airport	General Aviation	County of San Diego	1995	None planned
Brown Field	General Aviation	City of San Diego	1980	On hold
Fallbrook Community Airpark	General Aviation	County of San Diego	Adoption Pending early 2005	None planned
Gillespie Field Airport	General Aviation	County of San Diego	1986 (Airport Layout Plan – September 2005)	None planned
Jacumba Airport	General Aviation	County of San Diego	None	None planned
McClellan-Palomar Airport	Commercial and General Aviation	County of San Diego	1997 Revalidated May 2004	None planned
Montgomery Airport	General Aviation	City of San Diego	1980 (Adoption of updating pending – late 2005)	None planned
Oceanside Municipal Airport	General Aviation	City of Oceanside	1994	None planned
Ocotillo Airport	General Aviation	County of San Diego	None	None planned
Ramona Airport	General Aviation	County of San Diego	Prepared 1994; never adopted	Extend runway to accommodate firefighting aircraft
San Diego International Airport	Commercial and General Aviation	San Diego County Regional Airport Authority	1998 (update in progress, expected completion – 2006)	Terminal Improvements

REGIONAL BIKEWAYS

Most neighborhood bicycle trips can be accommodated on local streets where traffic volumes are lower and vehicle speeds are slower. However, converting a higher share of both community and intercommunity trips to bicycling will require improvements to the region's bikeway network.

While all roadways are open to bicycle travel unless it is specifically prohibited, the California Highway Design Manual establishes three classifications of facilities specifically for bicycle traffic as shown in Table 4.7. The Revenue Constrained Plan includes an intercommunity bikeway network that is a combination of these facility types.

Bicycle Facility Types. Table 4.8 and Figure 4.7 show the planned regional bikeway corridors network. The purpose of the network is to connect all the major communities in the region with convenient and attractive bikeways. The network was designed to ensure that all high-demand corridors are covered, and that there is good bike access to the transit system of the future. Where adequate bikeways currently exist, or where projects currently are being developed, Figure 4.7 depicts the bikeway's alignment. In some cases however, only the need for bikeway improvements has been identified. In that case, only a general corridor is depicted. Where local jurisdictions have adopted bicycle transportation plans, the bikeways in the network were based on those plans. Where no plan exists, the corridors were selected in consultation with local agency staff.

TABLE 4.7—BICYCLE FACILITY TYPES

FACILITY	DESCRIPTION
Bike Path (Multi-Use Trail), Class I	An 8- to 12-foot paved path within its own right-of-way to provide a non-motorized connection or access where it cannot be provided on the roadway.
Bike Lanes, Class II	Five-foot lanes striped on the outside of the roadway and identified with signs and pavement markings.
Bike Route, Class III	Roads designated by signs as preferred routes for bicycle travel.

TABLE 4.8—REGIONAL BIKEWAY CORRIDORS

BIKEWAY	AREAS SERVED
Coastal Rail Trail	Oceanside, Carlsbad, Encinitas, Solana Beach, Del Mar, and San Diego
Camp Pendleton Trail	Oceanside to San Clemente
I-15 Bikeway	Riverside County to Mid-City San Diego
San Luis Rey River Trail	North Oceanside from the Beach to SR 76
Inland Rail Trail	Escondido, San Marcos, Vista, Oceanside, and adjacent unincorporated areas
Palomar Airport Road/ San Marcos Blvd.	Carlsbad to San Marcos
La Costa Ave./ Rancho Santa Fe Road	Encinitas to San Marcos
El Camino Real Corridor	Oceanside, Carlsbad, Encinitas, and Solana Beach
Escondido Creek Bikeway	Escondido
Mid-County Bikeway	Del Mar, San Diego, Rancho Santa Fe, and Escondido
SR 56 Bikeway	San Diego and Poway
Scripps Poway Parkway	Scripps Ranch, Poway
Central Coast Corridor	Torrey Pines, La Jolla, Pacific Beach, Mission Beach, Mission Bay, Point Loma, and Downtown Sa Diego
SR 52 Bikeway	Clairemont, Kearny Mesa, Santee
San Diego River Bikeway	Ocean Beach, Mission Valley, Mission Trails Regional Park, Santee
East County - Centre City Corridor	La Mesa, Mid-City, North Park, Downtown San Diego
SR 94 Corridor Bikeway	Lemon Grove, Mid-City, Downtown San Diego
SR 125 Corridor	Santee, La Mesa, Lemon Grove, Bonita, Chula Vista, Otay Mesa
Sweetwater River Bikeway	Chula Vista, National City, Bonita
SR 54 Bikeway	Lakeside, El Cajon, Rancho San Diego, Spring Valley
I-8 Corridor	Lakeside to Imperial County
Bayshore Bikeway	San Diego, Coronado, National City, Chula Vista, and Imperial Beach
Chula Vista Greenbelt	Otay River, Chula Vista, Otay Lakes
SR 905 Corridor	Otay Mesa, International Border

IMPROVING NON-MOTORIZED ALTERNATIVES

Bicycling and walking are quintessentially local modes of transportation, but both can play a part in the region's transportation network. Nearly 40 percent of all home-to-work trips could be made in about 30 minutes by bicycle, and 40 percent of home-based trips not associated with work are within ten minutes by bike.

Transportation facilities should be designed to encourage bicycle and walking trips, and not be a barrier to those trips.

Making the region's transportation network more accessible will require an expanded financial commitment to bicycling and walking infrastructure. Some improvements can be accomplished relatively easily when new streets are built or old ones are reconstructed. However, some parts of the region's transportation network will need to be retrofitted without the benefit of a major reconstruction. Financing these improvements is one of the challenges that the region faces.

Planning and Designing for Pedestrians

SANDAG recently took a significant step toward establishing more walkable communities when it adopted *Planning and Designing for Pedestrians, Model Guidelines for the San Diego Region (June 2002)*. This document provides guidance on a wide range of factors affecting walkability such as:

- Providing a mix of land uses within communities that makes more destinations accessible on foot
- Building interconnected street networks that provide more direct access
- Designing streets that connect a community rather than divide it
- Street crossing designs and traffic calming measures that create a more pedestrian-friendly street environment while minimizing the impact to traffic flow
- Streetscapes designed to a pedestrian scale, and site layouts that encourage pedestrian access
- Sidewalk design that provides space for the variety of functions the sidewalk must perform

Ideally, this type of development should be focused along transit corridors and around transit hubs.

SANDAG will assist member agencies in developing policies that facilitate implementation of these developments. In addition, regional transportation funding decisions will be influenced by how well the transportation projects and related land uses accommodate bicycling and walking.


San Diego Region
MAP AREA
Camp Pendleton
Oceanside
Vista
San Marcos
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
PACIFIC OCEAN
Poway
County of San Diego
Santee
El Cajon
La Mesa
San Diego
Lemon Grove
Coronado
National City
Chula Vista
Imperial Beach
UNITED STATES
MEXICO
Tijuana, B.C.
Figure 4.7
REGIONAL BIKEWAY CORRIDORS
February 2006
Regional Bikeway
Regional Arterials
Future Regional Arterials
Highways
Future Highways
MILES
0 3 6
0 4.83 9.6
KILOMETERS
N
SANDAG

Access to Public Transit

The principles in *Planning and Designing for Pedestrians* support the region's goals for improving access to public transit. Mixed land use and network connectivity make it easier for public transit to efficiently take people where they want to go. Well-designed sidewalks and crosswalks make walking to and from transit more attractive. The guidelines show how to do this, and how to incorporate transit stops into pedestrian walkways so there will be room for both.

Bicycle Facilities and Access

Communities that support walking as a means of access usually are bicycle-friendly communities as well. The mix of land uses bring more destinations into easy bicycling range where the bicycle can fill the gap between destinations that can be reached on foot and those that would require a transit or auto trip. Calming traffic on pedestrian-oriented streets usually makes them more attractive places to ride a bike.

Calming traffic on pedestrian-oriented streets usually makes them more attractive places to ride a bike.

Beyond these improvements, bicycle access is improved where the road network provides space for bicyclists and road surfaces are well-maintained. Where the street network cannot adequately serve bicyclists, separate bike paths should be built. These bike paths or trails also can provide access for pedestrians. Also important are adequate bike parking and other support facilities and ongoing education and promotional programs.

Bike Parking. Bicycle theft is one of the deterrents to bicycle travel, but it can be overcome by providing quality bicycle parking facilities. Fortunately, good bicycle parking can be provided at a very modest cost. In contrast, poor quality bike parking is often underutilized because it is either inconvenient, does not effectively secure the bike, or both. Through its Bicycle-Pedestrian Working Group, SANDAG has developed bicycle parking guidelines that should be disseminated and adopted around the region. For bicycle commuting trips, employers should be encouraged to provide bike lockers or other high-security parking.

On-Demand Bike Lockers. On-demand bicycle lockers allow bicycle commuters to use any locker at a given site on a first-come, first-served basis. Such lockers are being pilot tested for consideration for new and replacement installations of the region's existing bicycle lockers. These state-of-the-art lockers use electronic keys, allow multiple users the opportunity to use the same locker, and have the ability to provide information about utilization and demand. The potential benefits of the on-demand lockers include reduced program administration costs, reduced inappropriate usage of the lockers, and increased utilization. In addition, the total number of lockers required at any given site may be reduced as the number of lockers required only needs to meet the peak demand. Currently a locker is provided for every registered user, regardless of how often that person uses it. Upon successful completion of the pilot program, the entire system could be converted as old lockers reach the end of their useful life.

Support facilities such as clothing lockers and showers greatly enhance the experience of bicycling to and from the workplace and also serve to encourage employees to consider bicycling as a viable commute choice.

Support Facilities. Support facilities such as clothing lockers and showers greatly enhance the experience of bicycling to and from the workplace and also serve to encourage employees to consider bicycling as a viable commute choice. Where employment density warrants, local agencies should consider policies that encourage building owners and employers to provide clothing lockers and showers for their employees to accommodate longer bike trips.

Education on proper bicycle riding can significantly improve the bicyclist's safety, which in turn can help to overcome some of the resistance to bicycling.

Bicycle Education. The most frequently cited reason for not riding a bicycle is concern for personal safety. This is understandable since bicyclists are very vulnerable in collisions with motor vehicles. However, education on proper bicycle riding can significantly improve the bicyclist's safety, which, in turn, can help to overcome some of this resistance. Since there is no regionwide bicycle safety education program, efforts should be made to make bicycle safety information available to both adults and children. Bicycle education for children should be provided through the schools. Instituting an ongoing program in the schools will likely require development of a teacher training program. Effective programs that can serve as a model have been instituted in Texas and Nevada. Opportunities also may exist to distribute bicycle safety materials to adults in conjunction with campaigns that promote alternatives to driving alone, but a program will have to be developed and funding sources will have to be identified for such an effort. To further encourage both bicycling and walking, the Revenue Constrained Plan also continues support for the SANDAG/RideLink annual Bike to Work Day and support for events like the annual Walk Your Child to School Day.

Bicycle and Pedestrian Program Funding

Financing bicycle and pedestrian projects, and providing incentives for community designs that support these modes, is one of the challenges facing the region. Often, no separate funding for these improvements is required when bicycle and pedestrian infrastructure improvements are included as part of a larger transportation project. However, there are many communities in the region that would benefit from improved bicycle and pedestrian facilities that do not anticipate new construction or major redevelopment. Financing improvements in these areas is often difficult. The annual revenues from the Transportation Development Act for bicycle and pedestrian projects (currently about $2.5 million), and the $1 million in annual *TransNet* funds set aside for bicycle projects, provide less than half the funds requested in each annual funding cycle.

However, there are no completed pedestrian plans, and some of the bicycle transportation plans so old they need to be updated. This makes it difficult to estimate the full cost of meeting the region's needs to support bicycling and walking. However, based on existing bicycle transportation plans, ongoing planning and design efforts for major regional bikeway projects, and historical experience regarding the annual demand for bicycle and pedestrian funding, current bicycle project needs for the region are at least $332 million.

ACTIONS

The following actions support the Revenue Constrained Plan's Systems Development Chapter recommendations.

SYSTEMS DEVELOPMENT		
Proposed Actions		**Responsible Parties**
Regional Network and Systems – The following proposed actions support the RTP goals of Mobility and Accessibility.		
1.	Maintain evaluation criteria for prioritizing highway, regional transit, and arterial projects, and update these criteria to better reflect the goals of the RTP, as needed.	SANDAG
2.	Allocate regional funds to transportation projects, programs, and services based on established criteria, which provide priority to implementing smart growth, the *TransNet* Early Action Program, and other SANDAG Board policies.	SANDAG
Regional Transit Vision – The following proposed actions support the RTP goals of Mobility, Accessibility, Reliability, Livability, Sustainability, and Equity.		
3.	Implement appropriate transit priority measures on local streets and regional arterials such as signal priority or queue jumper lanes for transit vehicles.	Local jurisdictions, SANDAG, MTS, & NCTD
4.	Fund regional program to develop Transit First Priority Measures projects, pursue additional revenue sources to match regional program, and develop a prioritized list of projects for consideration in future funding cycles.	SANDAG, MTS, & NCTD
5.	Fund regional rail grade separation program, pursue additional revenue sources to match regional program, and adopt prioritization criteria to identify regional priorities.	SANDAG, MTS, NCTD, & Caltrans
6.	Determine the transit alignment, identify station locations, and select the appropriate technology, as required, for the regional transit services as prioritized in the RTP.	SANDAG, MTS, NCTD, & Caltrans
7.	Secure future rights-of-way and pursue implementation of improved transit services, including early action projects, as opportunities occur.	SANDAG, MTS, NCTD, & Caltrans
8.	Refine design guidelines for transit stations to incorporate customer features, bicycle and pedestrian access, and other design considerations.	SANDAG, MTS, & NCTD
9.	Consistent with the priorities identified in the RTP, expand fixed route services into developing areas when sufficient density and funding exist to make service cost-effective, enhance transit service to existing developed areas, and provide feeder services to new rail stations.	SANDAG, MTS, & NCTD

SYSTEMS DEVELOPMENT		
Proposed Actions		**Responsible Parties**
10.	Annually update the regional short-range transit plans (RSRTP), and implement service productivity, reliability, and efficiency improvements.	SANDAG, MTS, & NCTD
11.	Implement the service productivity and other recommendations from the performance audit process of the Transportation Development Act.	SANDAG, MTS, NCTD, & other transit operators
12.	Conduct study of existing public/private funding partnerships for transit services nationwide. Identify applicable partnerships for the San Diego region.	SANDAG, MTS, & NCTD
13.	Evaluate parking demand and needs at major transit stations in the region.	SANDAG, MTS, & NCTD
14.	Identify private and public funding sources and market the potential for smart growth/joint development of transit parking structures and other improvements.	SANDAG, MTS, & NCTD
	Commuter, Intercity, and High-Speed Rail	
15.	Finalize the programmatic environmental impact report/environmental impact statement for conventional rail improvements in the Los Angeles to San Diego coastal rail corridor.	Caltrans, SANDAG, NCTD, & MTS
16.	Support efforts to secure federal and state funding to improve and expand the LOSSAN intercity passenger rail services.	SANDAG, MTS, NCTD, Amtrak, & Southern California Rail Agencies
17.	Proceed with project-level environmental studies, design, and implementation of double tracking, and other rail improvement projects in the coastal rail corridor.	SANDAG, MTS, & NCTD
18.	Coordinate with efforts of the California High-Speed Rail Authority for high-speed passenger rail service on the inland I-15 corridors.	SANDAG, California High-Speed Rail Authority, MTS, NCTD, & Riverside County Transportation Commission
19.	Continue to coordinate coastal rail efforts with the LOSSAN member agencies and explore new initiatives, such as the COASTER-Amtrak Rail-2-Rail program.	SANDAG, NCTD, Caltrans, & Amtrak

SYSTEMS DEVELOPMENT		
Proposed Actions		**Responsible Parties**
	Accessible Transit	
20.	Improve accessibility of transit stops and walkways to stops for persons with disabilities and identify potential funding programs for these improvements.	SANDAG, MTS, NCTD, & Local Jurisdictions
21.	Improve connections and transfers between paratransit and fixed-route transit operations.	SANDAG, MTS, NCTD, Paratransit Operators, & Coordinated Transportation Service Agency
22.	Facilitate efforts to promote coordination among fixed-route and paratransit operators and non-profit agencies in the region.	SANDAG, MTS, NCTD, Paratransit Operators, & Coordinated Transportation Service Agency
23.	Continue educational efforts on use of transit and accessibility equipment among persons with disabilities.	SANDAG, MTS, & NCTD
24.	Continue to use SANDAG's Subcommittee on Accessible Transportation (SCAT) to recognize the changing transit needs of seniors and persons with disabilities, including those too frail to access traditional fixed route and ADA paratransit services. Assist with solutions development.	SANDAG, MTS, NCTD, Paratransit Operators, & Coordinated Transportation Service Agency
25.	Utilize recommendations made in the June 2000 Senior Transportation Study commissioned by SANDAG to implement projects addressing the needs of the aforementioned transportation disadvantaged populations.	SANDAG, MTS, NCTD, Paratransit Operators, & Coordinated Transportation Service Agency
Highways and Arterials – The following proposed actions support the RTP goals of Mobility, Reliability, Efficiency, and Sustainability.		
26.	Incorporate planned highway network identified in the RTP into local general plans, community plans, and specific project development plans, and reserve appropriate right-of-way through the subdivision review process and other means.	Local Jurisdictions
27.	Develop Project Study Reports (PSRs) in accordance with the priorities identified in the RTP.	Caltrans

SYSTEMS DEVELOPMENT		
Proposed Actions		**Responsible Parties**
28.	Provide operational and other improvements, such as auxiliary and passing lanes where appropriate, to improve safety and to maximize the efficiency of highways and arterials. Fund regional program to relieve highway "pinch points," pursue additional state and federal funding to match regional program, and develop a prioritized list of potential projects for consideration in future funding cycles.	SANDAG, Caltrans, & Local Jurisdictions
29.	Implement signal timing programs along the designated Regional Arterial System, and improve traffic signal operations by interconnecting signalized intersections under centralized control, and by coordinating with ramp signal systems at freeway interchanges.	SANDAG & Local Jurisdictions
30.	Develop guidelines to ensure that all regionally funded transportation projects preserve or enhance existing non-motorized access, and provide for appropriate access where such facilities are planned.	SANDAG, in cooperation with Local Jurisdictions
Borders, Goods Movement, and Intermodal Facilities – The following proposed actions support the RTP goals of Mobility, Accessibility, Efficiency, and Reliability.		
31.	Complete I-15 Interregional Partnership Program (IRP) and incorporate IRP recommendations, as appropriate, into development of future RTPs.	SANDAG, Western Riverside Council of Governments, Caltrans, & other local agencies
32.	Evaluate the development of other interregional partnerships with other neighboring counties and Mexico to address land use and transportation needs.	SANDAG & other agencies
33.	Secure funding for needed transportation infrastructure in the region's border areas and coordinate the implementation of border-related capital and operating improvements with the federal General Services Administration (GSA).	Caltrans, SANDAG, City of San Diego, County of San Diego, GSA, & Mexico
34.	Identify public and private funds and partnerships to reopen the Desert Line of the SD&AE Railway for revenue service.	SANDAG & MTS
35.	Encourage off-peak use of rail capacity for rail freight movement, and evaluate using Managed/HOV facilities for goods movement during off-peak periods.	NCTD & MTS (owners of rail rights-of-way within the region), Caltrans, & SANDAG
36.	Review the potential for consolidating intermodal rail, truck, and air cargo freight terminals at specific staging areas.	Caltrans, SANDAG, Port of San Diego, MTS, and Shippers

SYSTEMS DEVELOPMENT		
Proposed Actions		**Responsible Parties**
Aviation – The following proposed actions support the RTP goals of Mobility and Efficiency.		
37.	Complete the technical studies for the Airport Site Selection Program and, in 2006, place an advisory proposition on the countywide ballot regarding a proposed regional airport solution(s).	San Diego County Regional Airport Authority (SDCRAA)
38.	Adopt and implement the Airport Master Plan for San Diego International Airport (SDIA) in order to meet capacity needs over the next 20 years.	SDCRAA

APPENDIX A
PUBLIC INVOLVEMENT PROGRAM

SANDAG implemented a public communications and outreach plan for the 2030 Revenue Constrained RTP: 2006 Update to secure input from stakeholders on the update and to start the process for early and ongoing input into the comprehensive RTP update in 2007. The activities for the 2030 Revenue Constrained RTP: 2006 Update included:

- Developed dedicated Web page that was regularly updated with RTP information and announcements.
- Distributed information, requests for comment, public meeting announcements via Web site, and electronic updates.
- Provided announcements in monthly r*E*gion newsletter, monthly Board Actions, regional and community newspapers, and other publications.
- Distributed/presented information at Policy committee meetings: Transportation Committee, Regional Planning Committee, Borders Committee, SANDAG Board of Directors meetings.
- Distributed/presented information at the Regional Planning Stakeholders Working Group, the Cities/County Transportation Advisory Committee, the Regional Planning Technical Working Group, and the San Diego Conformity Working Group meetings.
- Promoted 2006 Update at speaking engagements with business, community, and other stakeholder groups.
- Responded to requests for speakers.

APPENDIX B
AIR QUALITY PLANNING AND TRANSPORTATION CONFORMITY

BACKGROUND

The federal Clean Air Act (CAA), which was last amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. California has adopted state air quality standards that are more stringent than the NAAQS. Areas with levels that exceed the standard for specified pollutants are designated as non-attainment areas.

The U.S. EPA requires that each state containing non-attainment areas develop plans to attain the NAAQS by a specified attainment deadline. These attainment plans are called State Implementation Plans. The San Diego County Air Pollution Control District (APCD) prepares the San Diego portion of the California State Implementation Plan (SIP). Once the standards are attained, further plans—called Maintenance Plans—are required to demonstrate continued maintenance of the NAAQS.

SANDAG and the U.S. Department of Transportation (DOT) must make a determination that the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP) conform to the SIP for air quality. Conformity to the SIP means that transportation activities will not create new air quality violations, worsen existing violations, or delay the attainment of the national ambient air quality standards.

On March 28, 2003, the SANDAG Board of Directors made a finding of conformity of the 2030 Revenue Constrained RTP and adopted this Plan. The U.S. DOT made its conformity determination on April 9, 2003. The 2004 RTIP was found in conformity with the SIP by the SANDAG Board of Directors and by the U.S. DOT on July 23, 2004, and on October 4, 2004, respectively.

On April 15, 2004, the U.S. EPA designated the San Diego air basin as non-attainment for the new 8-Hour ozone standard. This designation took effect on June 15, 2004. The air basin has been classified as a basic non-attainment area under Subpart 1 of the Clean Air Act and the attainment date for the 8-Hour ozone standard is June 15, 2009. Several areas that are tribal lands in eastern San Diego County were excluded from the non-attainment designation. As shown in Figure B.1 on page 99, La Posta Areas #1 and #2, Cuyapaipe, Manzanita, and Campo Areas #1 and #2 are attainment areas for the 8-Hour Ozone NAAQS. In cooperation with the San Diego APCD and SANDAG, the California Air Resources Board (ARB) must develop an 8-Hour Ozone Attainment Plan for submission to the U.S. EPA by June 15, 2007.

The *Final Transportation Conformity Rule Amendments for the New 8-Hour Ozone and PM2.5 National Ambient Air Quality Standards* of July 2004 require that conformity of the RTP and the RTIP for non-attainment areas be determined to the 8-Hour ozone standard by June 15, 2005. The SANDAG Board of Directors made a finding of conformity of the 2030 RTP and 2004 RTIP, as amended, on April 22, 2005. The U.S. DOT issued its conformity finding on May 20, 2005.

The San Diego region attained the federal 1-Hour ozone standard in 2001. The U.S. EPA redesignated the San Diego air basin as attainment/maintenance and approved the 1-Hour Ozone Maintenance Plan as a SIP revision, effective on July 28, 2003. On June 15, 2005, the U.S. EPA revoked the federal 1-Hour ozone standard.

The San Diego region also has been designated by the U.S. EPA as a federal maintenance area for the Carbon Monoxide (CO) standard. On November 8, 2004, ARB submitted the *2004 Revision to the California State*

Implementation Plan for Carbon Monoxide to the U.S. EPA. Effective January 30, 2006, U.S. EPA has approved this maintenance plan as a SIP revision. The new CO motor vehicle emissions budgets are the applicable budgets for transportation conformity.

On December 17, 2004, the U.S. EPA designated the San Diego region as a non-attainment area for PM2.5. However, on April 5, 2005, the U.S. EPA modified the designation status of the San Diego air basin to attainment, based on monitoring data for the three-year period of 2002 to 2004.

TRANSPORTATION CONFORMITY: REGIONAL EMISSIONS ANALYSIS AND MODELING PROCEDURES

Introduction

SANDAG has updated the Revenue Constrained Scenario of the 2030 RTP to conduct the required air quality conformity analysis within a three-year cycle. Conformity of the 2030 RTP expires on April 9, 2006. Chapter 3 provides information on revenue assumptions and Chapter 4 describes the Revenue Constrained Scenario.

Growth Forecasts

Every three to five years, SANDAG produces a long-range forecast of population, housing, and employment growth for the San Diego region. The most recent is the Final 2030 Regional Growth Forecast, which was accepted by the SANDAG Board of Directors on December 19, 2003, for use in planning studies.

The forecast process relies on three integrated forecasting models. The first one, the Demographic and Economic Forecasting Model (DEFM), provides a detailed econometric and demographic forecast for the entire region. The second one, the Interregional Commuting Model, provides a forecast of commuting between the San Diego region, southwest Riverside County, and Tijuana/Northern Baja California. The third one, the Urban Development Model, allocates the results of the first two models to subregional areas based upon the current plans and policies of the jurisdictions.

The Final 2030 Regional Growth Forecast is based solely on the adopted general plans and community plans and policies of the 18 cities. For the unincorporated area, the forecast is based on the most recent (December 2002) version of the County's GP2020 plan update, as directed by the Board of Supervisors.

In July 2005, SANDAG consulted with the San Diego Region Conformity Working Group (CWG) on the use of the Final 2030 Regional Growth Forecast for the air quality conformity analysis of the 2030 Revenue Constrained RTP: 2006 Update. Previously, both U.S. DOT and U.S. EPA concurred that approved plans should be used as input in the air quality conformity process. Table B.1 shows the regional population and employment growth forecast for the San Diego region through 2030.

TABLE B.1—SAN DIEGO REGIONAL POPULATION AND EMPLOYMENT FORECAST

Final 2030 Regional Growth Forecast		
Year	**Total Population**	**Total Employment**
2000	2,813,833	1,384,676
2010	3,211,721	1,528,522
2020	3,528,605	1,672,883
2030	3,855,085	1,824,030

Source: SANDAG, December 2003

Transportation Modeling

SANDAG follows a widely used four-step transportation modeling process of trip generation, trip distribution, mode choice, and assignment to forecast travel activity in the San Diego region. After trip generation, several iterations through the trip distribution, mode choice, and assignment steps are made to bring travel demand into equilibrium with supply. Finally, travel model results are combined with additional input and output functions to form the complete modeling chain. Travel forecasting procedures are described in more detail in SANDAG's *Final 2030 Forecast Process and Model Documentation* (April 2004) and the *Addendum to Transportation Model Documentation* (June 2005).

The estimates of regional transportation-related emissions analysis meet the requirements established in the Transportation Conformity Rule, Sections 93.122(b) and 93.122(c). These requirements relate to the procedures to determine regional transportation-related emissions, including the use of network-based travel models, methods to estimate traffic speeds and delays, and the estimation of vehicle miles of travel.

TransCAD is the transportation planning computer package used by SANDAG to provide a framework for performing much of the computer processing involved with modeling. Another software package used extensively in the modeling process is ArcInfo. This geographic information system (GIS) maintains, manipulates, and displays transportation, land use, and demographic data. SANDAG has written numerous programs that provide a linkage between TransCAD and ArcInfo. Other programs manipulate data and perform some modeling functions such as trip generation and mode choice.

A number of data files and surveys are used to calibrate the transportation models. These include:

- 1995 Travel Behavior Survey
- 2001 Caltrans Statewide Travel Survey
- 2001-2003 San Diego Regional Transit Survey
- External Trip Surveys
- Traffic Generation Studies
- 1991 San Diego Visitor Survey
- 2000 Census Transportation Planning Package

In addition to model parameters derived from these surveys, there are three major inputs to the transportation models:

- growth forecast inputs used to describe existing and planned land use patterns and demographic characteristics
- highway networks used to describe existing roadway facilities and planned improvements to the roadway system
- transit networks used to describe existing and planned public transit service

Highway Networks

The regional highway networks in the 2030 Revenue Constrained RTP: 2006 Update include all roads classified by local jurisdictions in their General Plan circulation elements. These roads include freeways, expressways, and the Regional Arterial System (RAS). The RAS consists of all conventional state highways, prime arterials, and selected major streets. In addition, some local streets are included in the networks for connectivity between zones.

The route improvements and additions in the 2030 Revenue Constrained RTP: 2006 Update are developed to provide adequate travel service that is compatible with adopted regional policies for land use and population growth. All regionally significant projects are included in the quantitative emissions analysis. These include all state highways, all proposed National Highway System routes, all regionally significant arterials, and all FHWA functionally classified "Other Principal Arterials."

The networks also account for programs intended to improve the operation of the highway system, including high occupancy vehicle (HOV) lanes and ramp metering. Existing and proposed toll facilities also are modeled to reflect time, cost, and capacity effects of these facilities. The SR 125 South project and SR 241 are the only modeled toll facilities in the San Diego region.

In addition, several managed/HOV lanes are included in the Revenue Constrained Plan. Facilities with proposed managed lanes include I-5, I-15, I-805, and SR 52. Managed lanes are defined as reversible HOV routes and HOV routes with two or more lanes in the peak direction. It is assumed that the excess capacity not utilized by carpools and transit on these facilities would be managed so that single occupant vehicles could use these lanes under a pricing mechanism. Traffic flows would be managed so that the facility would operate at level of service C or better.

Based on the networks and programs described above, the transportation forecasts of the 2030 Revenue Constrained RTP: 2006 Update differentiate between four highway modes: drive alone/non-toll, drive alone/toll, shared-ride/HOV, and shared-ride/non-HOV.

SANDAG normally maintains networks for 2000 (the 2030 Regional Growth Forecast base year) and the years 2010, 2020, and 2030. A 2014 network also was created to conduct air quality conformity analyses of the 2030 Revenue Constrained RTP: 2006 Update to the 2014 1-Hour ozone emissions budgets. Additionally, a base year 2002 network and a 2009 network were created to conduct the interim emissions test for the 8-Hour ozone standard attainment year.

Table 4.5 in Chapter 4 lists the major highway projects included in the analysis and their implementation phasing. The Regional Arterial System shown in Figure 4.2 and a list of those arterials was described in Table TA 7.5 of Technical Appendix 7 - Transportation Evaluation Criteria and Rankings of the 2030 RTP (adopted

in 2003). Locally funded regionally significant projects also have been included in the air quality conformity analysis. These projects are funded with *TransNet* funds, a 20-year half-percent local sales tax for transportation that expires in 2008; *TransNet* extension funds, a 40-year, half-percent local sales tax extension approved by voters in 2004 that expires in 2048; and other local revenue sources.

Transit Networks

SANDAG also maintains transit network datasets for existing and proposed transit systems. Most transit routes run over the same streets, freeways, HOV lanes and ramps used in the highway networks. As a result the only additional facilities that are added to the transportation coverage for transit modeling purposes are:

- trolley and commuter rail lines
- streets used by buses that are not part of local general plan circulation elements

There are seven transit modes, which group routes with similar operating characteristics: commuter rail, trolley, regional bus rapid transit (BRT), corridor BRT, limited express bus, express bus, and local bus. Regional and corridor BRT modes were recently added to represent a new type of transit service proposed in the 2030 RTP. BRT service would have stations and operating characteristics similar to commuter rail and trolleys, but service would be provided by advanced design buses operating on HOV lanes, some grade-separated transit ways, and surface streets. Once TransCAD transit networks have been built, TransCAD finds minimum time paths between transit access points (TAPs). TAPs are selected transit stops that are used to represent walk and auto access to the transit system. The following four sets of paths are created for modes:

- AM peak period local bus
- AM peak period premium service
- Mid-day local bus
- Mid-day premium service

Bus speeds assumed in the transit networks are derived from modeled highway speeds and reflect the effects of congestion. Regional and express transit routes on surface streets are assumed to operate out of congestion due to priority transit treatments. Higher bus speeds may result for transit vehicles operating on highways with HOV lanes and HOV bypass lanes at ramp meters, compared to those routes that operate on highways where these facilities do not exist.

In addition to transit travel times, transit fares are required as input to the mode choice model. TransCAD procedures replicate the San Diego region's complicated fare policies which differ between:

- buses which collect a flat fare of between $1.75 and $4.00 depending on the type of service,
- trolleys which charge a variable fare of between $1.25 and $3.00 depending on how many stations are traversed,
- commuter rail which has a zone-based fare of between $3.50 and $4.75,
- proposed regional BRT routes which are assumed to charge a distance based fare of between $0.14 and $0.60 per mile that replicates limited express and commuter rail fares, and
- proposed corridor BRT routes which are assumed to use trolley station-based fares.

Fares are expressed in 2004 dollars and are assumed to remain constant in inflation-adjusted dollars over the forecast period.

Near-term transit route changes are drawn from the Regional Short-Range Transit Plan produced in cooperation with the region's transit agencies. Longer-range improvements are proposed as a part of the RTP development and other transit corridor studies. In addition to federal and state funded projects, locally funded regionally significant transit projects have been included in the air quality conformity analysis of the 2006 Revenue Constrained Scenario of the 2030 RTP. These transit projects also are funded with *TransNet* funds or other local revenue sources. Once network coding is completed, the transportation models are run for the applicable scenarios (2002, 2009, 2010, 2014, 2020, and 2030). Table 4.2 in Chapter 4 lists the major regional transit projects included in the analysis and their implementation phasing.

Trip Generation

Trip generation is the first step in the transportation modeling process. Average weekday trip ends by all forms of transportation starting and ending in each zone are estimated for ten trip types: home-work, home-college, home-school, home-shop, home-other, work-other, and other-other, serve passenger, visitor, and airport. The model computes person trips, which account for all forms of transportation including automobiles, trucks, taxicabs, motorcycles, public transit, bicycling and walking.

The trip generation model works by applying trip rates to zone level growth forecasts. The model calculates each of the trip ends separately, as trip productions and attractions. Trip production rates are expressed as trips per household while trip production rates vary by trip type and structure type. Trip attractions are expressed as trips per acre of nonresidential land use or trips per household. Trip attraction rates vary by trip type and land use category. The Final 2030 Regional Growth Forecast was used to produce trip generation forecasts for the years 2002, 2009, 2010, 2014, 2020, and 2030. Trip generation rates were established by utilizing data from traffic generator studies and expanding rates from the 1995 Travel Behavior Survey and 2001 Caltrans Statewide Travel Survey.

SANDAG's regional transportation model uses a relatively high trip generation rate for households (8.1 vehicle trips per day), which may account for possible increases in trip making as new facilities are built. Also, the model accounts for travel diversion among facilities.

The model reduces future year person trips by a small amount to reflect increased use of tele-working and e-commerce. Reduction factors of three to five percent were applied to selected trip purposes and land uses.

Trip Distribution

After trip generation, trip movements between zones are determined using a doubly-constrained gamma-function gravity model form of the trip distribution model. Inputs to the trip distribution model include zone level trip generation forecasts by trip type, zone-to-zone impedances, and gamma function parameters by trip type. The model is designed to modify trip patterns in response to new development and reflects shortened trip lengths in the vicinity of Smart Growth, mixed-use developments. The model also modifies trip patterns as new roadways are added.

The model is calibrated to match observed trip length frequencies from the 1995 Travel Behavior Survey and 2001 Caltrans Statewide Travel Survey. Zone-to-zone impedances are a composite measure of peak and off-peak travel times and costs by highway, transit and non-motorized modes. Several iterations of trip distribution, mode choice, and assignment are performed to bring model-estimated highway travel into

equilibrium with supply. After each iteration or feedback loop, impedances are recomputed to reflect changes in highway congestion.

Mode Choice

At this point in the modeling process, total person trip movements between zones are split into different forms of transportation by highway, transit, and non-motorized modes (bicycling and walking). Highway modes include drive alone/non-toll, drive alone toll, shared-ride/HOV, and shared-ride/non-HOV. Nine transit modes differentiate transit trips by three ride modes (rail/BRT, express bus and local bus) and three access modes (walk, drive, and drop-off). The mode choice model is designed to link mode use to demographic assumptions, highway network conditions, transit system configuration, land use alternatives, parking costs, transit fares, and auto operating costs. Trips between zone pairs are allocated to modes based on the cost and time of traveling by a particular mode compared to the cost and time of traveling by other modes. For example, vehicle trips on a congested route would be more likely to be diverted to light rail than vehicle trips on an uncongested freeway.

Income level also is considered since lower income households tend to own fewer automobiles and therefore make more trips by transit and carpooling. People in higher income households tend to choose modes based on time and convenience rather than cost. The mode choice model is calibrated using 1995 and 2001 Travel Behavior Survey trip tables by mode and income and 2001-2003 Regional Transit Survey transit trip characteristics. Regional level Census 2000 work trip mode shares were also used to fine-tune mode share estimates.

Highway and transit travel times reflect highway congestion effects from the final iteration of the feedback loop. The model produces a.m. peak, p.m. peak, and off-peak period trip tables for vehicles and transit riders. The a.m. peak period is from 6 to 9 in the morning and the p.m. peak period is from 3 to 6 in the afternoon. The off-peak period covers the remaining 18 hours of the day. A series of mode choice model runs were performed in the course of analyzing the 2030 Revenue Constrained RTP: 2006 Update through two model iterations.

Highway and Transit Assignment

Highway

Highway assignment produces traffic volume estimates for all roadway segments in the system. These traffic volumes are an important input to emissions modeling. Similarly, transit trips are assigned to transit routes and segments.

SANDAG loads traffic using TransCAD's "Multi-Modal Multi-Class Assignment" function. The highway assignment model works by finding roads that provide the shortest travel impedance between each zone pair. Trips between zone pairs are then accumulated on road segments making up minimum paths. Highway impedances consider posted speed limits, signal delays, congestion delays, and costs. The model computes congestion delays for each segment based on the ratio of the traffic volume to roadway capacity. Motorists may choose different paths during peak hours when congestion can be heavy and off-peak hours when roadways are typically free flowing. For this reason, traffic is assigned separately for a.m. peak, p.m. peak, and off-peak periods. Vehicle trip tables for each scenario reflect increased trip-making due to population growth and variations in travel patterns due to the alternative transportation facilities/networks proposed.

Model accuracy is assessed by comparing model estimated traffic volumes with actual traffic counts obtained through SANDAG's traffic monitoring program and Highway Performance Monitoring System (HPMS) estimates of vehicle miles of travel (VMT).

After completing the highway assignments additional processing is needed. Adjustments are made for calibration error volume, HOV/managed lane volume, bus volumes, hourly distribution factors, level-of-service (LOS), and travel time.

Transit

For transit assignment, TransCAD software assigns Transit Access Point (TAP)-to-TAP transit trips to the network. Eight separate transit assignments are produced for peak and off-peak periods; walk and auto access; and local bus and premium service. These individual assignments are summed to obtain total transit ridership forecasts.

Before assigning transit trips, external transit trips coming into San Diego from outside the region need to be added to the internal transit trips estimated by the mode choice model. Currently few transit trips enter from the north or east, however, over 20,000 transit trips cross the Mexican border each day. An external transit trip table for the base year is developed from on-board transit ridership surveys and factored to future years based on border crossing trends to account for these trips.

For accuracy transit ridership forecasts from the transit assignment model are compared with transit counts from SANDAG's transit passenger counting program to determine whether transit modeling parameters need to be adjusted.

Some of these comparisons of model-estimated boardings with actual boardings include:

- system level boardings, which may reveal transfer rate problems and lead to changes to the transfer wait time factor in the mode choice model,
- boardings by mode, which may reveal modal biases and lead to changes in mode choice modal constants,
- boardings by frequency of service, which may show biases that lead to changes in the first wait factor in the mode choice model,
- Centre City screenline crossings, which may lead to changes in parking costs, boardings by stop location, which may indicate problems which specific generators such as a university

Post-TransCAD Processing

Standard TransCAD output needs to be reformatted and adjusted to be useful for emissions modeling. Several routines and computer programs have been written to accomplish the following major functions:

- Correcting link specific traffic volume forecasts for calibration error
- Adding in estimated travel on roads not in the transportation modeling process
- Computing link speeds based on corrected link volumes, Highway Capacity Manual relationships between congestion and speed (or signal delay)
- Splitting link volumes into heavy-duty truck and other traffic to obtain speed distributions by vehicle class
- Preparing a data set that contains total VMT, number of trip starts, and VMT by speed category by time of day for each vehicle class.

Motor Vehicle Emissions Modeling

Emissions Model

In October 2002, ARB released EMFAC 2002, an emissions inventory model that calculates emissions for motor vehicles operating in California. It is an integrated model that combines emission rate data with vehicle activity to calculate regional emissions. The U.S. EPA approved EMFAC 2002 for use in conformity determinations on April 1, 2003.

The EMFAC 2002 model supports calculation of emissions for the Burden mode. The Burden mode is used for calculating regional emission inventories. In this mode, the model reports total emissions as tons per day for each pollutant, by vehicle class and the total vehicle fleet. The Burden mode uses emission factors that have been corrected for ambient conditions and speeds combined with vehicle activity to calculate emissions in tons per day. Vehicle activity includes the number of vehicles, daily vehicle miles traveled, and the number of daily trips.

The air quality analysis of the 2030 Revenue Constrained RTP: 2006 Update was conducted using EMFAC 2002's Burden mode. Projections of daily regional emissions were prepared for reactive organic gases (ROG), nitrogen oxides (NOx), and carbon monoxide (CO).

On-road motor vehicle emissions are attributed to several different processes:

- Starting exhaust
- Running exhaust
- Idle exhaust (calculated for heavy-duty trucks only)
- Resting and diurnal evaporation
- Running losses
- Hot soak evaporation

Emission factors vary by vehicle class, fuel usage, and technology. Thirteen vehicle classes are modeled: passenger car, two types of light-duty trucks, medium-duty truck, two types of light-heavy-duty trucks, medium-heavy-duty truck, heavy-heavy-duty truck, line-haul vehicle, urban bus, school bus, motorcycle, and motor-home. The fuels modeled are gasoline, diesel, and electrically powered vehicles. Technology categories can be grouped into catalyst, noncatalyst, and diesel.

Emission factors for processes that vary by temperature (i.e., starting exhaust, hot soak, and running exhaust) are broken down further by specified temperature ranges. Exhaust emission factors also are broken down by speed range.

Regional Emissions Forecasts

Regional transportation forecasts were initiated in August 2005. Output from the TransCAD model was then reformatted and adjusted to be useful for emissions modeling.

8-Hour Ozone Standard

The transportation conformity rule prescribes different conformity tests for 8-Hour ozone areas that have 1-Hour Ozone State Implementation Plan (SIP) budgets and for areas that do not have 1-Hour Ozone SIPs. The San Diego 1-Hour Ozone Maintenance Plan established ROG and NOx budgets for 2010 and 2014, but

not for 2009. On June 26, 2003, The U.S. EPA approved the Maintenance Plan and motor vehicle emissions budgets as SIP revisions. These SIP revisions became effective on July 28, 2003.

In August 2004, SANDAG consulted with the CWG on various options for interim emissions analysis. The approach agreed by the CWG is as follows:

- Under the new 8-Hour ozone standard, the San Diego air basin falls under Boundary Scenario 2, where the 8-Hour ozone area is smaller than and within the 1-Hour ozone boundary. Figure B.1, on page 99, shows the Eastern San Diego County attainment areas, which are tribal lands (Cuyapaipe, La Posta #1 and #2, Campo #1 and #2, and Manzanita). The CWG agreed to use the existing approved budget for the entire 1-Hour ozone non-attainment area for the analysis years for which 1-Hour ozone budgets are available (2010 and 2014) and for the remaining analysis years (2020 and 2030).
- To conduct the interim emissions test for 2009, the CWG agreed to use the no-greater-than-2002 test for the attainment year 2009.

In July 2005, the CWG reaffirmed the approach described above for the 8-hour ozone emissions analysis of the 2006 Revenue Constrained Scenario of the 2030 RTP. Countywide forecasts of average weekday ROG and NOx emissions were produced for 2002, 2009, 2010, 2014, 2020, and 2030 using the EMFAC 2002 model. ROG and NOx emissions are based on the summer season.

The analysis years were selected to comply with Sections 93.106(a) (1) and 93.118 (a) of the Transportation Conformity Rule. According to these sections, the first horizon year (2010) must be within ten years from the base year used to validate the regional transportation model (2000), the last horizon year must be the last year of the transportation plan's forecast period (2030), and the horizon years may be no more than ten years apart (2020). In addition, as explained above, the interim regional emissions analysis for the 8-Hour ozone standard must be conducted for the emissions budgets in the applicable SIP (ROG and NOx budgets for 2010 and 2014). Finally, emissions forecasts for 2002 and 2009 were prepared to conduct the interim attainment year 2009 test.

CO Standard

CO regional emissions were projected for 2010, 2018, 2020, and 2030 for the conformity determination of the 2006 Revenue Constrained Scenario of the 2030 RTP. CO emissions are based on the winter season.

Emissions Modeling Results

An emissions budget is the part of the SIP that identifies emissions levels necessary for meeting emissions reduction milestones, attainment, or maintenance demonstrations.

To determine conformity of the 2030 Revenue Constrained RTP: 2006 Update, the plan must comply with the interim emission analysis described in the Regional Emissions Forecast section.

Table B.2 summarizes the 2030 Revenue Constrained RTP: 2006 Update air quality conformity analysis for the 8-Hour ozone standard. This analysis shows that the 2030 Revenue Constrained RTP: 2006 Update (including interim years) meets the applicable budgets and interim tests. Projected ROG and NOx emissions for 2009 are lower than the base year 2002 and those for 2010, 2014, 2020, and 2030 are below the SIP budgets for 2010 and 2014.

TABLE B.2—2006 REVENUE CONSTRAINED SCENARIO OF THE 2030 RTP
Air Quality Conformity Analysis for 8-Hour ozone

Year	Average Weekday Vehicle Starts (1,000s)	Average Weekday Vehicle Miles (1,000s)	ROG		NOx	
			SIP Emissions Budget Tons/Day	ROG Emissions Tons/Day	SIP Emissions Budget Tons/Day	NOx Emissions Tons/Day
2002	13,251	77,172	---	72	---	130
2009	14,088	84,302	---	43	---	83
2010	14,239	84,897	46	40	88	77
2014	14,799	89,033	36	31	66	56
2020	15,643	94,332	36	24	66	37
2030	17,195	104,698	36	17	66	22

Note: Emissions budgets from *San Diego Region 1-Hour Ozone Maintenance Plan (*Approved as SIP revision in July 2003).

Table B.3, on the following page, shows that projected CO emissions from the 2030 Revenue Constrained RTP: 2006 Update are below the 2003 CO budget of 730 tons per day.

TABLE B.3—2006 REVENUE CONSTRAINED SCENARIO OF THE 2030 RTP
Air Quality Conformity Analysis for Carbon Monoxide

Year	Average Weekday Vehicle Starts (1,000s)	Average Weekday Vehicle Miles (1,000s)	CO	
			SIP Emissions Budget Tons/Day	CO Emissions Tons/Day
2010	14,239	84,897	730	414
2018	15,362	92,445	730	251
2020	15,643	94,332	730	210
2030	17,195	104,698	730	134

Note: Emissions budgets for the San Diego region from *2004 Revision to California State Implementation Plan for Carbon Monoxide, Updated Maintenance Plan for Ten Federal Planning Areas (*Approved as SIP revision in January 2006).

Exempt Projects

Section 93.126 of the Transportation Conformity Rule exempts certain highway and transit projects from the requirement to determine conformity. The categories of exempt projects include safety, mass transit, air quality (ridesharing and bicycle and pedestrian facilities), and other (such as planning studies).

Table B.4 on the following page illustrates the exempt projects considered in the 2006 Revenue Constrained Scenario of the 2030 RTP. This table shows short-term exempt projects. Additional unidentified projects could be funded with revenues expected to be available from the continuation of existing state and federal programs.

Implementation of Transportation Control Measures

There are four federally-approved TCMs that must be implemented in San Diego, which the SIP refers to as Transportation Tactics. They include ridesharing, transit service improvements, traffic flow improvements, and bicycle facilities and programs.

These TCMs were established in the 1982 SIP, which identified general objectives and implementing actions for each tactic. The TCMs have been fully implemented. Ridesharing, transit, bicycling, and traffic flow improvements continue to be funded, although the level of implementation established in the SIP has been surpassed. No TCMs have been removed or substituted from the 1-Hour Ozone Maintenance Plan, which is the applicable SIP. The list of actions that implemented the TCMs is available at SANDAG.

TABLE B.4—EXEMPT PROJECTS

Project/Program Description
Bikeway, Rail Trail and Pedestrian Projects
Bayshore Bikeway
Downtown Encinitas Streetscape II
Castle Park Elementary School Sidewalk Improvements
Fourth Avenue Sidewalk Improvements
Hazard Center Road Bike Path Study at SR 163
Brandon Road Sidewalk
Julian Avenue Sidewalks
Plaza Bonita Class I Bikeway
University Avenue/Yale Avenue pedestrian enhancements
Mira Mesa Boulevard Bikeway
Adams Avenue Bikeway
Balboa Avenue/Tierrasanta Boulevard Bikeway
Cliff Street Pedestrian/Bicycle Bridge
Inland Rail Trail
Coastal Rail Trail
Regionwide Traffic Incident Management
Freeway Service Patrol
Safety Improvement Program
Hazard Elimination
Bridge Rehabilitation/Preservation
Collision Reduction
Roadway/Roadside Preservation
Noise Barrier Program
Transportation Demand Management
RideLink Regional Rideshare Program
Regional Vanpool Program
Transportation Management Systems
Automated Traveler Information System (ATIS)
Intermodal Transportation Management System (IMTMS)
Joint Transportation Operations Center (JTOC)
Fiber-Optic/Closed-Circuit Camera (I-8/I-15/I-805)
Traffic Management System (I-805, SR 94)
Ramp Meters (I-5/I-805, SR 94)

Interagency Consultation Process and Public Input

The consultation process followed to prepare the air quality conformity analysis for the 2030 Revenue Constrained RTP: 2006 Update complies with the San Diego Transportation Conformity Procedures adopted in July 1998. In turn, these procedures comply with federal requirements under 40 CFR 93. Interagency consultation involves SANDAG (as the MPO for San Diego County), the APCD, Caltrans, ARB, U.S. DOT, and U.S. EPA.

Consultation is a three-tier process that:

1. formulates and reviews drafts through a conformity working group
2. provides local agencies and the public with opportunities for input through existing regional advisory committees and workshops
3. seeks comments from affected federal and state agencies through participation in the development of draft documents and circulation of supporting materials prior to formal adoption

SANDAG consulted on the development of the air quality conformity analysis of the 2030 Revenue Constrained RTP: 2006 Update at meetings of the San Diego Region Conformity Working Group (CWG), as follows:

- On July 20, 2005, SANDAG staff presented the schedule for the preparation of the 2030 Revenue Constrained RTP: 2006 Update and its conformity analysis. Staff initiated consultation on criteria and procedures for determining conformity. Items discussed included interim emissions analysis, the use of latest planning assumptions, implementation of TCMs, emissions model and budgets, as well as consultation and public involvement.
- On August 17, 2005, SANDAG staff presented additional information on the 2030 Revenue Constrained RTP: 2006 Update including: revenue-constrained plan assumptions, travel demand modeling, transportation control measures, and public outreach activities.
- On September 19, 2005, SANDAG staff presented the draft list of revenue-constrained highway projects, transit services, and exempt projects as well as revenues and expenditures projected through 2030.
- On October 5, 2005, SANDAG released the draft air quality conformity analysis of the 2030 Revenue Constrained RTP: 2006 Update to the San Diego Region CWG for a 30-day review and comment period. On October 19, 2005, the draft air quality analysis was discussed at the meeting of the San Diego Region CWG and comments were incorporated in this report.

On December 9, 2005, the Transportation Committee authorized the distribution of the draft 2030 Revenue Constrained RTP: 2006 Update and draft conformity analysis for public review and comment. A Public Hearing was held at the January 27, 2006, meeting of the SANDAG Board of Directors. No comments were received on the air quality conformity analysis of the 2030 Revenue Constrained RTP: 2006 Update.

Members of the public are welcomed to provide comments at meetings of the San Diego Region CWG, the Transportation Committee, and the SANDAG Board of Directors.

Figure B.1
Eastern San Diego County Attainment Areas for the 8-Hour Ozone NAAQS